THE BEAUTIES OF NATURE AND ART DISPLAYED, IN A TOUR THROUGH THE WORLD;

CONTAINING

I. A General Account of all the Countries in the World, remarkable for either Natural or Artificial Curioſities; their Situation, Boundaries, Extent. and Diviſions; their Rivers, Air, Soil, chief Cities, &c.

II. A particular Account of the moſt curious natural Productions of each Country, in the Animal, Vegetable, and Foſſil Kingdoms; of remarkable Mountains, Caverns, and Volcanos; of Medicinal and other ſingular Springs; of Cataracts, Whirlpools, &c.

III. An Hiſtorical Account of the moſt remarkable Earthquakes, Inundations, Fires, Epidemic Diſeaſes, and other public Calamities, which have at different Times viſited the Inhabitants.

IV. Extraordinary Inſtances of Longevity, Fertility, &c. among the Inhabitants; together with an Account of their moſt celebrated Inventions, Diſcoveries, &c.

V. Particular Deſcriptions of the moſt remarkable public Buildings, and other ſingular Productions of Art.

VI. Curious Remains of Antiquity; remarkable Laws, Cuſtoms, and Traditions of the Inhabitants; together with a Summary View of the moſt extraordinary Revolutions among them.

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BRITISH MUSEUM

THE BEAUTIES OF NATURE AND ART DISPLAYED, IN A TOUR THROUGH THE WORLD.

Of ITALY.

REMARKABLE CUSTOMS,

(Continued.)

THE carnival is another diverſion peculiar to Venice. It always begins on the ſecond holiday after Chriſtmas, and laſts till Lent, during which time there is an univerſal change of dreſs, cuſtoms and laws; the faces of every body are hid under a whimſical variety of maſks; the play-houſes and gaming-houſes are laid open, all marks of diſtinction, even of ſexes, are ſet aſide, and all move and act upon an equal foot-ing. Conſtraint, reſpect, ceremony, care, buſineſs, and even virtue, modeſty, and decorum, ſeem baniſhed from ſociety, to give place to joy, liberty, folly, and licentiouſneſs. The piazza of St. Mark, and the other moſt public parts of the city, are covered with toyſhops, and frequented by jugglers, rope-dancers, tumblers, mountebanks, puppet-ſhows, and fortune-tellers; and the whole city is crowded with courtezans from all parts of Italy. The plays and operas make, indeed, the much finer part of the diverſions of this ſeaſon; but the cuſtom of going maſked, gives ſuch a great handle to indecent liberties, that decency ſeems to be totally extinguiſhed. The aſſemblies called Ridotti, where they play at Baſſet, are opened, at the ſame time with the theatres. Ten or twelve rooms may be ſometimes ſeen with gaming tables in each, crowded with gameſters maſked, with ladies of quality and courtezans. They have alſo certain rooms, where liquors and ſweetmeats are ſold. Every perſon thus maſked, provided he is well dreſſed, has the liberty of talking to the ladies, even of the higheſt quality; no body, not even the huſband himſelf, taking notice at that time of what is ſaid to his wife, becauſe the maſk is ſacred. But no maſk muſt wear a ſword.

Theſe extravagant diverſions are ſaid to be permitted by the ſenate of Venice, to divert the people from feeling the heavy burden of their government, which, without ſuch amuſement, it is ſuppoſed, would be intolerable: but the true motive ſeems to be, the vaſt number of ſtrangers, who come from all parts of Italy, to partake of the diverſions of the Carnival, and bring great ſums of money to the place; there being ſometimes no leſs than ſeven or eight ſovereign princes, and between thirty and forty thouſand other foreigners at Venice to ſee theſe diverſions.

Another diverſion peculiar to this city, is their bridge battles, which are fought only hand to fiſt, one pariſh or ward againſt another, upon the bridge that parts them, and as thoſe bridges have neither battlements nor rails, they frequently throw one another into the canal, and ſometimes one man in the fall draws his antagoniſt after him, and perhaps two or three more are by the ſame means drawn after them. But a diverſion practiſed in ſeveral parts of this city on Holy Thurſday, is ſtill more peculiar to the Venetians, though not unknown to the ancient Romans, as appears from Claudian. It is as follows: A ſet of men, by the help of a number of poles, which they lay acroſs each others ſhoulders, rear themſelves up into a kind of pyramid, or four or five ſtories or rows of men, riſing one above another; and their weight is ſo equally diſtributed, that every man is very well able to bear his ſhare of it; theſe rows growing leſs and leſs, as they advance in height, a little boy crowns the pyramid, who, after ſome little time, leaps down, and is caught in the arms of one of thoſe on the ground, and is followed by all the reſt, one after another, till the whole ſtructure is fallen to pieces.

In their marriages, the Venetians regard only riches or connections; and in general, the perſons to be married, never ſee one another till they come before the prieſt. To prevent young noblemen and gentlemen of fortune marrying too ſoon, or falling into worſe diſaſters, their mothers make no ſcruple to hire one or two concubines for them at a time; and a man that has a mind for one or more handſome girls, may be readily ſupplied, with great choice, even by the girls own mothers, who expoſe their daughters to open ſale.

REVOLUTIONS and other MEMORABLE EVENTS.

CElebrated as this country is, hiſtorians have given no certain, nor even probable reaſons for its being called Italy. Indeed it was not antiently comprehended under any one common name; for, being cantoned into a variety of ſmall ſovereignties, with a name appropriated to each, the country in general was then only known by the names of its ſeveral provinces or diviſions.

Savoy was originally poſſeſſed by the Allobroges, the Centrones, and other barbarous people, as the Romans ſtiled them. Part of them were ſubdued by Terentius Varro, and the remainder by Auguſtus, who formed them into a province; and when the empire was over-run by foreign nations, Savoy ſuffered the common fate, ſometimes ſubject to one, ſometimes to another.

About the year 999, Berold, the ſon of Hugh, Duke of Saxony, went into Italy with his uncle the Emperor Otho III. who conferred upon him the government, and ſoon after the ſovereignty of Savoy: from which period, to the year 1690, nothing entertaining or remarkable is to be found in the hiſtory of this part of Italy.

In the year 1690, the Duke of Savoy entered into the grand alliance, when the confederates ſupplied him with a conſiderable body of troops, beſides large remittances of money, to enable him to make head againſt the French: but in this war, he was generally unfortunate, particularly in 1693, when the French obtained a complete victory, and Duke Schomberg, General of the Engliſh auxiliaries, was mortally wounded.

In 1696, he concluded a ſeparate peace with France, in conſideration of their reſtoring to him moſt of the towns taken from him during the war. It was alſo ſtipulated that the Duke of

Burgundy ſhould marry his daughter, and that the French refugees ſhould be all baniſhed from the territories of Savoy. Upon the death of Charles II. king of Spain, he joined the French, and with their aſſiſtance, endeavoured to prevent the Germans, under Prince Eugene, penetrating into Italy. But when the Germans had paſſed the Alps, he began to liſten to propoſals made to him by the allies. Lewis XIV. having received ſome intimation of this, impriſoned many of his troops; whereupon the Duke ſeized the ambaſſadors of France and Spain, with all the French at Turin. He was reſolved to adhere to the allies, and to make as good a ſtand againſt France as he could. Prince Eugene, who commanded the Emperor's army in Lombardy, ſent him, from time to time, ſuch ſmall detachments as he could ſpare, which ſerved as a ſort of flying camp, and haraſſed the French while they beſieged his towns, but could not prevent their ſucceſs in almoſt every attempt. Verceil, Suza, and Ivrea, ſurrendered in the year 1704, and Verue, after a ſix months ſiege, in 1705. But theſe fortreſſes were ſo well defended, that the French ſuffered conſiderable loſs, and the duke thereby gained time till the confederates could march to his aſſiſtance.

On the 3d of June, 1706, the French laid ſiege to Turin, and on the 28th of Auguſt following, the duke of Savoy was joined by prince Eugene, with the main body of the Imperial army. On the 7th of September they attacked the enemy before Turin, with their united forces, and gained a complete victory. The ſame day the duke entered his capital in triumph, which was now reduced to the laſt extremity, having endured a ſiege of three months, and conſumed very near all their ammunition and proviſion. At this battle the duke of Orleans and marſhal Marſin, who commanded the French, were wounded, and the marſhal died in three days after. The allies took an hundred and fifty pieces of cannon, and ſeven thouſand priſoners; whereupon not only the towns in Savoy and Piedmont, which the French had taken, were immediately reduced to the obedience of the duke of Savoy, but the Imperialiſts became maſters of the Milaneſe, and drove the French entirely out of Lombardy.

In 1707, count Taun, the Imperial general, marched with fifteen thouſand men into the kingdom of Naples, which he conquered without much bloodſhed. The duke of Savoy and prince Eugene, at the ſame time, marched into France with an army of forty thouſand men, and in conjunction with the confederate fleet, commanded by Sir Cloudeſly Shovel, laid ſiege to Toulon, but the taking of it being found impracticable, the duke returned into Italy before the end of a month. On the concluſion of the peace in 1713, the allies, in conſideration of the ſervices he had performed, and the hazards he had run in the confederate cauſe, conferred on him the kingdom of Sicily, to which the king of Spain gave his conſent, on condition of his Sicilian majeſty's entering into a firm alliance with him.

In 1718, the marquis de Lede invaded Sicily with eighteen thouſand Spaniards, and moſt of the towns ſubmitted to him, and acknowledged the ſovereignty of king Philip. Great-Britain, France, and the emperor, immediately entered into an alliance, which, upon the States-general coming into it, obtained the name of the quadruple alliance. By this treaty, they agreed to ſee the peace of Utrecht performed in all its articles, except ſuch as might be altered by their unanimous conſent. The king of Spain, overpowered by the Imperialiſts and their allies, agreed to evacuate the iſlands of Sicily and Sardinia, to acknowledge the emperor's title to one, and the king of Sardinia's to the other. His Sardinian majeſty's dominions having enjoyed almoſt a profound peace ever ſince the year 1720, many abuſes that had crept into the adminiſtration during their wars, have been corrected; and trade, as well as manufactures of all kinds, greatly encouraged. Their laws alſo, which were extremely voluminous, have been reviewed, and reduced into a narrower compaſs, by which means the proceedings in courts of judicature are facilitated, to the great ſatisfaction and convenience of the ſubjects.

The territories of the Venetians in Italy are divided into a variety of provinces; but the duchy of Venice contains almoſt all the Venetian ſea-coaſts in Italy, with the iſlands, lakes and marſhes. They boaſt that their government has laſted upwards of thirteen hundred years; but their ſtate has certainly undergone many changes and revolutions in that time.

About the year 1325, the great council, which was then compoſed of the chief citizens, paſſed an act for reducing their number, and veſting the ſovereign authority in certain families and their iſſue-male, who, at the age of twenty-five, were to be introduced into the aſſembly without any election, or any other form than that of proving their legitimacy. This body of men have long ſince aſſumed the title of noble Venetians, who look upon themſelves to be at leaſt equal to the electors of the empire, and but one degree below kings; for which reaſon they ſeldom travel into foreign countries, where they muſt have the mortification of being conſidered merely as private gentlemen.

About a century ago, it was computed there were about five and twenty hundred of theſe noble Venetians who had voices in the great council, but their numbers are now much reduced, notwithſtanding the increaſe of families; for during their war with the Turks in Candia, when their treaſury began to be exhauſted, and on other exigencies of the ſtate, they permitted merchants and opulent citizens, and even ſome foreigners, to purchaſe the honour of nobility, and conſequently a ſeat in the great council, for themſelves and their heirs. The order of nobles is uſually divided into four claſſes. Firſt, thoſe twelve families that were really noble before the inſtitution of the commonwealth. Secondly, ſuch as were regiſtered when the members of the great council were limited. Thirdly, Such as have purchaſed their nobility; and, Fourthly, Thoſe who have been created noble in reward for diſtinguiſhed merit.

The duchy of Mantua, in the year 1100, was, by ſome leading men of the country, erected into a government of its own, and rendered independent of any foreign power: but their liberties ſoon decayed, and Mantua became ſubject to ſeveral tyrants; the laſt of whom was however depoſed in 1328, by Lewis de Gonzaga, who obtained the ſovereignty as vicar of the empire. His ſucceſſors enjoyed the title of lords of Mantua till the year 1435, when the emperor honoured them with the title of marquis; and Charles V. afterwards conferred that of duke on Frederic II. The duchy continued in this branch till 1627, when Vincent II. dying without iſſue, his couſin Charles Gonzaga, duke of Nevers in France, by the aſſiſtance of Lewis XIII. obtained the duchy. His grandſon, Ferdinand Charles IV. adhering to the French king in the wars of thoſe times, was proſcribed by the emperor, who ſeized the duchy as a forfeited fee; and the duke dying in 1708, without iſſue, it fell into the poſſeſſion of his Imperial majeſty.

The duchy of Parma was antiently inhabited by the Tuſcans; and above an hundred years before the birth of Chriſt, a colony was eſtabliſhed there by the Romans. Upon the declenſion of the Roman empire, it became ſubject to the barbarous nations that invaded Italy; but it was again reduced to the power of the ſee of Rome by pope Julius II.

In the year 1545, pope Paul III. created his natural ſon Peter Lewis Farneſe, duke of Parma and Placenza; but the emperor diſputed his title, till his ſon Octavio Farneſe married Margaret of Auſtria, the emperor's natural daughter, which confirmed this duchy to the Farneſian family, though the emperor ſtill looks upon it as a fief of the empire, and revertible to him in failure of male iſſue. The pope, on the contrary, claims it as a fee of the holy ſee, and actually receives ten thouſand crowns per annum of this prince.

Genoa, which was the antient Liguria, fell under the dominion of the Romans, with the other parts of Italy. The city was taken at that time, and deſtroyed, by Mago, the brother of Hannibal, but was rebuilt by Lucretius, under the conſulſhip of Servilius Cepio and Nepos. Upon the revolution of the Roman empire, it became ſubject to the Lombards; after which, the Genoeſe erected governments of their own, but were ſo tumultuous and unſteady, thar no ſtate has ever undergone greater changes. They were ſucceſſively ſubject to the archbiſhop of Milan, the French, the marquis of Montferat, the duke of Milan, and again to the French; and in the intervals of theſe foreign governments, they choſe counts, conſuls, and captains of their own.

At length, in the year 1518, Andrew Doria ſettled it as a republic, in which form it has continued ever ſince. Doria was one of the greateſt admirals and generals of that age; he had ſerved alternately in the Spaniſh and French armies, and had the addreſs to play one of thoſe powers ſo ſucceſsfully againſt the other, that he entirely diſengaged his country from a dependance on either of them, and erected a free ſtate notwithſtanding the Genoeſe offered to make him their hereditary prince; but ſo jealous was he of their liberties, that he procured an act of ſtate, that neither he, nor any of his deſcendants, nor any other powerful family in the commonwealth, ſhould be admitted to any office or ſhare in the government, leſt they ſhould uſurp the ſovereign power.

In the year 1547, however, a popular citizen, named Fieſco, obtained ſuch an influence over the people, by his art and munificence, that he almoſt effected a revolution of the republic. He prevailed upon the citizens to impriſon the principal ſenators under pretence of mal-adminiſtration, and created an ill opinion in the people, of their admired protector Doria, the only man whom he apprehended able to fruſtrate his deſigns, and in a little time he made himſelf maſter of the city. But going the ſame day in triumph to take poſſeſſion of the fleet which lay at anchor in the harbour, and walking over a plank from one veſſel to another, he dropped into the ſea, and being loaded with his armour, was drowned; this accident threw his party into immediate confuſion, of which the aged Doria took advantage, and became a ſecond time the founder of the commonwealth. Fieſco's body being afterwards found, the ſenate decreed that it ſhould be carried ſeveral leagues off, and with ignominious ceremonies thrown into the ſea; that his eſtate ſhould be confiſcated, his palace demoliſhed, and the ruins remain a monument of his treachery; which they do to this day. On the contrary, fine marble ſtatues were erected on each ſide the ſtairs of the ſenate-houſe, in memory of the patriotic virtue of prince Doria, and his nephew, who was killed in oppoſing the uſurper.

That part of Italy, which is now known by the name of Tuſcany, was antiently called Umbria, Tyrrhenia, and Hetruria. It was divided into twelve principalities, each of them governed by their reſpective ſovereigns, till it fell under the dominion of the Romans at the time of the general invaſion. Florence, the capital city, was then deſtroyed, and not rebuilt till near two hundred and fifty years after. During the diſputes between the emperor and the pope of Rome, the cities of Florence, Piſa, and Sienna, threw off the ſubjection of both, and erected ſuch governments for themſelves as they thought fit. Their conſtitutions however were continually varying as the nobility or people prevailed, till ſome of the moſt popular noblemen in Florence aſſumed the government of that city, and reduced it to the form of a monarchy. The aſpiring citizens brought about frequent revolutions at different periods; but at laſt the houſe of Medicis had the good fortune to fix the government in their own hands, and they long continued ſovereigns of the greateſt part of Tuſcany, having alſo reduced the republics of Piſa and Sienna to their dominion.

Rome, the metropolis of the pope's dominions, and antiently of the Roman empire, derived its name from Roma, a Trojan lady, or, according to others, from Romulus the founder, who is ſuppoſed to have begun his reign about the year of the world 3300, and to have reigned thirty-ſeven years. To him ſucceeded Numa Pompilius, who reformed many barbarous cuſtoms, and eſtabliſhed religious rites.

In 3381, Tullus Hoſtilius, his ſucceſſor, regulated the military diſcipline. He was killed, after a reign of thirty-three years, by a thunderbolt; and was ſucceeded by Ancus Marcius, as guardian to the children of Hoſtilius, but having obtained the title of king, he ſubdued ſome tribes of the Latins and incorporated them with the citizens of Rome. He extended his conqueſts as far as the Tuſcan ſea. Tarquinius Priſcus, in 3437, is ſaid to have been the firſt of the Romans that wore a crown. He increaſed the number of the ſenate to an hundred, and the Roman knights to three hundred; appointing the faſces to be carried before the magiſtrates, to diſtinguiſh them from the common people. In his reign the Gauls made themſelves maſters of that part of Italy, which lies on each ſide the Po, which thereupon obtained the name of Gallia, and is at preſent called Lombardy.

In 3521 reigned Tarquin the Proud, who was the laſt of the Roman kings. The conſular government began about the year of the world 3545. The conſuls, who preſided in the ſenate, were annually elected. The Sabines and Latins in their wars with Rome, were extremely weakened by their own diviſions, particularly when Appius Claudius deſerted to the Romans and carried over with him five thouſand families at once. The Equi and Volſci, the braveſt of the Latins, carried on the war however, ſeveral years, with various ſucceſs, but were at laſt entirely ſubdued by Lucius Quinctius, the celebrated dictator, who was taken from the plough but a little before he obtained that ſignal victory. The Veii who inhabited Tuſcany, for a long while contended with the Romans for empire, but having loſt ſeveral material battles, and at laſt ſhutting themſelves up within their own walls, after enduring a ſiege of ten years, were forced to ſurrender to Camillus the Roman general.

In 3666, the Gauls laid ſiege to Rome, and would have taken it by ſtratagem in the night, if they had not been diſcovered by the cackling of ſome geeſe. The brave Manlius immediately ly made a ſally from the fort, while Camillus attacked the Gauls in the rear, with an army of twenty thouſand men, and entirely defeated them. After this, the Samnites, being apprehenſive of the growing power of the Romans, entered into a war againſt them, which was ſupported with various ſucceſs for near fifty years, when the Samnites were ſubdued by Papirius Curſor. The city of Tarentum on the Adriatic ſea, with their confederates under the command of Pyrrhus king of Epirus, were the next that attacked them; but the Romans gained ſeveral compleat victories, and at laſt entirely conquered the ſouthern part of Italy. This happened about 447 years after the building of Rome, and in the year of the world 3777.

In the year of Rome 660, the Roman empire began to be diſtracted with civil wars, Marius being at the head of one faction, and Sylla of the other. The faction of Sylla at length prevailed, and he procured to himſelf the title of perpetual dictator, by which he was inveſted with the ſovereign power, and ſubject to no controul from the ſenate or the people; a power which, however, he did not abuſe, for having regulated the government according to his mind, he laid down his command, and retired from public buſineſs.

Ever ſince the deſtruction of the Lombards, which was in the year of Chriſt 774, the pope has maintained his ſovereignty over the city of Rome, and territories thereto belonging. At the time of the Reformation he loſt great part of his power and influence; but he ſtill continues a very conſiderable temporal prince, and is abſolute in his own dominions. The Campania of Rome is under the pope's immediate government. The other provinces of the eccleſiaſtical ſtate, are governed by legates and vice-legates, and he has a commander in chief of his forces in every province. It is computed that the monks and regular clergy, who are abſolutely at his command, are not fewer in number than two millions, and theſe are diſperſed through almoſt every country in the world, to aſſert his ſupremacy over princes, and promote the intereſt of the Roman catholic church.

The little republic of St. Marino has enjoyed its liberties thirteen hundred years. It was founded by Marino, a hermit, whoſe reputation for ſanctity, obtained him a ſufficient number of followers, to enable him to form this independent ſtate.

Lucca is another ſmall republic of about three hundred years ſtanding: the people purchaſed their independency of the emperor Rodolph, for ten thouſand crowns, and have continued free ever ſince.

Naples, upon the declenſion of the Roman empire, fell into the hands of the Goths; but they were in a few years diſpoſſeſſed by the Lombards, who remained maſters of it, till they were driven out by Charlemagne about the year 800.

CHAP. V.

Of GERMANY, BOHEMIA, HUNGARY, *and* SWITZERLAND.

SECT. I.

A general Account of Germany, Bohemia, Hungary, *and* Switzerland.

THE empire of Germany, the kingdoms of Bohemia and Hungary, and the thirteen cantons of Switzerland, are ſituated between 5 and 23 degrees eaſt longitude, and between 45 and 55 degrees north latitude.

The greateſt length of the empire is, from Stralſund in Pomerania, in the north, to the frontiers of Carniola and Iſtria in the ſouth, 600 miles; its greateſt breadth, from the town of Spa, in the biſhoprick of Liege, in the weſt, to the confines of Poland, in the eaſt, is about 500 miles. It is bounded on the north by the German ocean, Denmark, and the Baltic; on the eaſt, by Poland, Bohemia, and Hungary; on the ſouth, by the Alps, which divide it from Italy and Switzerland; and on the weſt, by France and the Netherlands.

The kingdom of Bohemia, with Sileſia and Moravia, lies between 12 and 19 degrees eaſt longitude, and between 48 and 52 degrees north latitude: its greateſt length is 300 miles, and the greateſt breadth 250. It is bounded on the north by Saxony and Brandenburgh; on the eaſt, by Poland and Hungary; on the ſouth, by Auſtria and Bavaria; and on the weſt, by the palatinate of Bavaria.

The kingdom of Hungary, with Tranſylvania, Sclavonia, and Croatia, all ſubject to the houſe of Auſtria, lies between 16 and 25 degrees of eaſt longitude; and between 45 and 49 degrees of north latitude. It is bounded by Poland on the north; by Turky, on the eaſt and ſouth; and by the German empire on the weſt: its greateſt length, from eaſt to weſt, is about 400 miles, and its greateſt breadth, from ſouth to north, 270 miles.

Switzerland, with the countries of the allies and ſubjects of the Switzers, is ſituated between 6 and 11 degrees eaſt longitude, and between 45 and 48 degrees of north latitude. It extends in length 260 miles, and in breadth 100 miles; and is bounded by Alſace and Swabia, in Germany, on the north; by the lake of Conſtance, Tyrol, and Trent, on the eaſt; by Italy, on the ſouth; and by France, on the weſt.

The German empire is generally divided into nine circles. 1. Lower Saxony, 2. Upper

Saxony, and 3. Weſtphalia, in the north. 4. Lower Rhine, 5. Upper Rhine, and 6. Franconia, in the middle. 7. Swabia, 8. Bavaria, and 9. Auſtria, in the ſouth.

1. In the circle of Lower Saxony are comprehended the duchy of Holſtein, partly ſubject to the king of Denmark, and partly to the duke of Holſtein. Its chief cities are Kiel, in Holſtein proper, ſubject to the duke of Holſtein; Mildorp, in Ditmarſh, and Glucſtat, in Stormaria, ſubject to the king of Denmark. Hamburgh, an imperial city, in the ſovereignty of Hamburgh; and Lubec, an imperial city, in Eaſt Wagerland; the duchy of Lawenburg, ſubject to the elector of Hanover, whoſe metropolis is Lawenburg.

The electorate of Brunſwick Lunenburgh, or Hanover, containing the principality of Grubenhagen, the duchy of Hanover, or Calenburg, the duchy of Brunſwick Lunenburg, which comprehends Zell, and is therefore called Lunenburg Zell; the duchy of Saxe Lawenburg, the duchy of Bremen, the duchy of Gottingen, and the duchy of Ferden, all ſubject to the elector of Hanover. The chief towns of this electorate are Hanover, the metropolis; Grubenhagen, Lunenburg, Bremen, Gottingen, and Ferden. The duchies of Brunſwick and Wolfembuttle, and the counties of Blakenburg and Rheinſtein, ſubject to the duke of Brunſwick Wolfenbuttle. The chief cities are Brunſwick, Wolfenbuttle, Blankenburg, and Rheinſtein. The duchy of Mecklenburg, divided into the

The

duchy of Swerin, and the duchy of Guſtrow, ſubject to their reſpective dukes, contains the cities of Swerin, Wiſmar, Guſtrow, and Roſtock. The duchy of Magdeburg, ſubject to Pruſſia, contains the city of Magdeburg, the biſhopric of Hildeſheim, containing the imperial city of Hildeſheim, ſubject to the elector of Cologn; and the duchy of Halberſtadt, ſubject to Pruſſia, in which is the city of Halberſtadt.

2. In the circle of Upper Saxony, are comprehended Pruſſian Pomerania, ſubject to the elector of Brandenburg. Swediſh Pomerania, ſubject to the Swedes. Brandenburgh, ſubject to its elector, divided into Altmark, Middlemark, and Newmark. The duchy of Saxony, ſubject to its own elector. The principality of Anhalt, ſubdivided into Deſſau, Bernburg, Zerbſt, Kothen, and Plotzka, each ſubject to its reſpective prince. The counties of Mansfelt, Schwartſburg, Hohenſtein, and Belchingen, ſubject to their reſpective counts. The landgraviate of Thuringia, ſubject to the elector of Mentz. The duchies of Merſberg, ſubject to the elector of Saxony; and Hall, ſubject to Pruſſia. The duchies of Saxe Meiningen, Saxe Naumberg, Saxe Zeits, Saxe Altenburg, Saxe Weimar, Saxe Gotha, Saxe Eiſenach, Saxe Saalfield, ſubject to their own dukes, and the county of Stolberg, ſubject to its own count. The chief cities in this circle are, Stetin, in Pruſſian Pomerania; Berlin, Franckfort, and Cuſtrin, in Brandenburg; Dreſden, in Saxony; Erfurth, in Thuringia, with many others of no ſmall note.

3. The circle of Weſtphalia comprehends the county of Embden, or Eaſt-Frieſland, ſubject to the king of Pruſſia. The county of Oldenburg, with Delmenhorſt, both ſubject to the king of Denmark. The biſhoprics of Munſter, Oſnabrug, and Paderborn, ſubject to the elector of Cologn. The biſhopric of Liege, ſubject to its own biſhop. Hoye and Diepholt, ſubject to the elector of Hanover. The duchies of Minden and Cleves, ſubject to the king of Pruſſia. Weſtphalia proper, ſubject to the elector of Cologn; Berg and Juliers, ſubject to the elector Palatine. The counties of Mark and Ravenſburgh, belonging to the king of Pruſſia; Bentheim, Steinfort, Tecklenburg, Schawenburg, Lippe, Ritberg, Pyrmont, each ſubject to its reſpective counts.

The principal cities in this circle, are Embden, an imperial city; Munſter, Paderborn, Oſnabrug, Pyrmont, Lippe, Minden, Cleves, in the duchy of Berg, Duſſeldorp, Juliers, and Aix la Chapelle, in the biſhopric of Juliers, Liege, Ham, Bentheim, aud Steinfort.

4. The circle of the Lower Rhine comprehends the archbiſhoprics and electorates of Cologn, Mentz, and Triers. The electorate of the Rhine, which includes the palatinate of the Rhine, Sponheim, the twelve bailiwicks of Simmeren, Creutnach, Oppenheim, &c. all ſubject to the elector Palatine, except Simmeren, which is ſubject to its own duke, and the biſhopric of Worms a ſovereign ſtate. The

chief cities in this circle, are Heidelberg, Philipſburgh, Manheim, and Frankandel, in the palatinate on the Rhine. Cologn, Mentz, and Triers, in their reſpective biſhoprics. Worms, on the Rhine, an imperial city; Simmeren, in the duchy of Simmeren, with ſome others of leſs note.

5. The circle of the Upper Rhine is divided into the landgraviates of Heſſe Caſſel, Heſſe Marpurg, Heſſe Darmſtadt, each ſubject to its reſpective landgrave. The abbey of Fuld, ſubject to its abbot. The abbey of Hirchfield, ſubject to Heſſe Caſſel. The county of Waldeck, ſubject to its own count. The Wetteraw, which contains the county of Solms, ſubject to its own count. Hanau, ſubject to Heſſe Caſſel. Eiſenburg, ſubject to its own count. Sayn, Wied, Witginſtein, Hatzfield, Weſterberg, and Naſſau, which laſt is divided into Dillemberg, Dietz, Hadamar, Kerberg, Seigen, Ideſtein, Wielburg, Wiſbaden, Beilſtein, Otweiler, and Uſingen, each of which is ſubject to its own count, of the houſe of Naſſau. The county of Erpach, ſubject to its own count. The biſhopric of Spire, a ſovereign ſtate. The duchy of Deuxponts, ſubject to the duke of Deuxponts. The county of Catzenelbogen, ſubject to Heſſe Caſſel, and the territory of Franckfort, a ſovereign ſtate.

The chief cities in the Upper Rhine are, Caſſel, Marpurg, and Darmſtadt, in Heſſe. Hamburg, Rhinefield, and Wanfried, likewiſe ſubject to the houſe of Heſſe. Franckfort on the Main, an imperial city. Erpach, in the county of Erpach. Spire on the Rhine, an imperial city. Deuxponts, in the palatinate, Waldeck, Solms, Hanau, Iſenberg, Sayn, Weid, &c.

6. The circle of Franconia contains the biſhoprics of Wurtzburg, Bamburg, and Aichſtat, ſubject to their ſeveral biſhops. The ſtate of the great maſter of the Teutonic order. The marquiſates of Cullenbach, Bareith, and Anſpach, ſubject to their reſpective margraves. The principality of Henneberg. The duchy of Hildburghauſen, ſubject to its duke. The marquiſate of Nuremberg, an independent ſtate. The counties of Holach, Caſſel, Schwartzenberg, Reinbuck, Warthiem, Papenheim, Senſheim, Limpurg, Dernbach, Geyer, Giech, Grevenitz, Hohenloe, Noſtitz, Schoenborn, and Windiſchgratz.

The chief cities are Hildburghauſen, Nuremburg, an imperial city, Coberg, Margentheim, in the ſtate of the grand maſter of the Teutonic order. Caſſel, in Caſſel. Schwartzenburg, Wurtzburg, Bamberg, Aichſtat, Cullenbach, Onſpach, and Henneberg.

7. The circle of Swabia comprehends the duchy of Wurtemburg, ſubject to the duke of Wurtemburg Stutgard. The principality of Hohenzollern, ſubject to its own prince. The marquiſates of Baden-Baden, and Baden Dur-

lach, ſubject to their reſpective margraves. The marquiſate of Ortenaw. The territory of Briſgow, ſubject to the houſe of Auſtria. The Black Foreſt, containing the principality of Furſtenburg, ſubject to its prince, and the county of Reinfelden, ſubject to the houſe of Auſtria. The biſhopric of Conſtance, ſubject to its own biſhop, under the houſe of Auſtria. The biſhopric of Augſburg, ſubject to its own biſhop. The abbeys of Kempten, Buchaw, and Lindaw. The marquiſate of Burgaw, ſubject to the houſe of Auſtria. The counties of Oetingen, Koningſeck, and Hohenrichburg. The barony of Waldburg. The barony of Limpurg. The territory of Ulm, a ſovereign ſtate. The imperial cities, or ſovereign ſtates of Nordlingen, Memminghen, Rotwel, and many others.

The chief cities of this circle are Stutgard, Tubingen and Hailbron, in the duchy of Wurtemburg. Baden Durlach, and Baden Weiler, in the marquiſates of Baden. Augſburgh, an imperial city. Hockſtet and Blenheim, in the biſhopric of Augſburg. Ulm, an imperial city on the Danube. Conſtance, Koningſeck, Waldburg, Limpurg, Nordlinghen, Memminghen, Rotwel, Friburg, Briſac, and many more.

8. The circle of Bavaria comprehends Nortgow, or the Upper Palatinate of Bavaria, which includes the landgraviate of Lauchtenburg, the county of Chamb, and the territory of Amberg. The duchy and electorate of Bavaria, containing the territories of Munich and Ingoldſtadt,

all ſubject to the elector of Bavaria. The biſhoprics of Freiſſingen, Ratiſbon, and Paſſau, ſubject to their own biſhops. The Lower Bavaria, comprehending the territories of Straubing, Landſhut, and Burkhauſen, ſubject to the elector of Bavaria. The archbiſhopric of Saltzburg, ſubject to its archbiſhop, and the duchy of Newburg, ſubject to the elector Palatine.

The chief cities are Munich, Landſhut, Ingoldſtadt, Sultzbach, Ratiſbon, an imperial city, Freiſſingen, Paſſau, Neuburg, and Saltzburg.

9. The circle of Auſtria, which is all ſubject to the queen of Hungary, contains the archduchy of Auſtria: this is divided into Higher and Lower Auſtria. Higher Auſtria comprehends the territories of Muhl, Schartz, Hauſs, and Traum. Lower Auſtria is divided into the territories of Upper and Lower Viennarwald, and Upper and Lower Manhartſberg. This circle alſo comprehends the duchies of Stiria, Carniola, or Crain, and Carinthia. The counties of Cilly, Goritz, and Tyrol, and the biſhopries of Brixen and Trent.

The chief cities of Auſtria, are Vienna, the metropolis: Gratz, in Stiria; Cilly, Goritz, in Goritia; Inſpruck, in Tyrol, and Brixen and Trent, on the confines of Italy and Switzerland.

The kingdom of Bohemia, beſides the duchy of Sileſia, and the marquiſate of Moravia, is properly divided into the eaſtern and weſtern parts by the river Moldaw, and each of theſe is ſubdivided into nine ſmall circles or provinces.

In the eaſtern part, are the provinces of Prague, Kaurſim, Becheyn, Czaſlaw, Chrudim, Koniginkrays, Glatz, Boleſlaw, Leitomeritz.

In the weſtern part, are the provinces of Satz, Schlany, Rakonick, Elmbogen, Egra, Padebrock, Pilſen, Moldaw, and Prachen.

The chief cities of Bohemia, are Prague, the metropolis, Carlſtein in Kaurſim, Leitomeritz, Satz, Czaſlaw, Pilſen, Koningratz, Elmbogen, Egra, and Glatz. The whole kingdom of Bohemia is ſubject to the queen of Hungary, except Glatz, which belongs to the king of Pruſſia.

The duchy of Sileſia is divided into Upper and Lower. In Upper Sileſia are the cities of Oppelen, Neiſs, Teſchen, Pleſs, Ratibor, Troppaw, Jagerndorf, Schweidnitz, and Jawer.

In Lower Sileſia are the cities of Lignitz; Breſlaw, the metropolis of all Sileſia, Oelſe, Sagan, Glogaw, and Croſſen, all ſubject to the king of Pruſſia, except Tropaw and Teſchen, which are ſubject to the houſe of Auſtria.

The marquiſate of Moravia, which is ſubject to the houſe of Auſtria, contains the cities of Olmutz, the capital, Brin, and Iglaw.

The kingdom of Hungary is likewiſe divided into two parts, upper and lower. Upper Hungary, which lies between the Danube and Poland, contains the following cities: Preſburg, the capital of all Hungary, Newhauſel, Leopoldſtadt, Chremnitz, Schemnitz, Eſperies, Caſchaw, Egra, or Agria, Peſt, Colocza, Segeden, Lippa, Great Waradin, Mongatz, Unguar, and Tokay.

Lower Hungary is ſituated on the ſouth ſide the Danube, between that and the Drave, and contains the cities of Altenburg, Kaniſha, Veſprin, or Weiſborn, Raab, Gran, Alba Regalis, or Stuhl Weiſſemburg, Buda, and Quinque Eccleſiæ.

In Tranſylvania are the cities of Harmanſtadt, the capital, Saltzenberg, and Cromſtadt.

In Sclavonia are the cities of Zagrab, Poſega, or Poſon, Gradiſca, Walpon, Eſſeck, Walkowar, Carlowitz, and Peterwaradin.

In Croatia are the cities of Carlſtadt, Siſeg, and Caſtanowitz.

Switzerland is divided into thirteen cantons, with their allies and ſubjects. The cantons are thoſe of Bern, of Fribourgh, of Baſil, of Lucern,

cern, and of Soloturn, on the weſt; thoſe of Schaffhauſen, Zurich, and Appenzel, on the eaſt; and thoſe of Zug, Swiſs, Glaris, Uri and Underwald, in the middle.

Every canton bears the name of its chief town, except thoſe of Uri, the chief town of which is Altdorf, and Underwald, the chief town of which is Stanz.

The allies of the Switzers, are the Griſons, the Valeſians, the republic of Geneva, the biſhopric of Baſil, Mulhauſen, Neufchatel and Valengin, and the towns of St. Gall, Bienna, and Rotweil. Each of theſe countries bears the name of its chief town.

Subject to the Switzers, are the counties of Sargans, Turgow, and Rotweil, and the bailiages of Lugano, Locarno, and Bellents; each county bearing the name of its chief town.

In the German empire are ſix archbiſhoprics, viz. Mentz, Triers, Cologn, Magdeburgh, Saltzburgh, and Bremen; beſides thirty-ſeven biſhoprics.

In Bohemia is the archbiſhopric of Bohemia, and the biſhoprics of Koningſgratz, Breſlau, and Olmutz.

In Hungary, are the archbiſhoprics of Preſburg, Gran, and Colocza, beſides the biſhoprics of Great Waradin, Agria, Veſprin, Raab, and Quinque Eccleſiæ.

In Tranſylvania is the biſhopric of Hermanſtadt. In Sclavonia, the biſhoprics of Poſega, and Zagrab.

In the empire, are twenty-ſeven univerſities, viz. Vienna, Mentz, Cologn, Triers, Liege, Heidelberg, Leipſic, Erfurt, Friburg, Ingoldſtadt, Tubingen, Roſtock, Wittemburg, Frankfort on the Oder, Straſburg, Gripſwald, Dillinghen, Jena, Lewinghen, Helmſtat, Sigen, Paderborn, Altorf, Gieſſen, Kiel, Gratz, and Gottingen. The univerſity of Prague, in Prague.

The principal rivers in this country, are,

1. The Danube, which riſes in Swabia, and paſſing eaſtward through Bavaria, receives the Lech, the Altmul, the Rab, Regen, Iſer, and Inn: thence it paſſes through Auſtria, where it receives the Fraun, Ens, and others, runs by the walls of Vienna, receiving the river Moraw, and enters Hungary, near Preſburg; then tending ſouthward, it paſſes Buda and Belgrade, being exceedingly increaſed by the Drave, which it receives at Eſſeck, and the Save at Belgrade; after which it is called Iſter, and running eaſtward, between Walachia and Bulgaria, diſcharges itſelf with five wide mouths into the Black, or Euxine ſea: its whole courſe thither,

from its fountain, is reckoned about 2000 miles, including its windings.

This river abounds with almoſt all kinds of fiſh, which are to be found in our running or ſtanding waters, which are generally much larger, but not ſo ſweet as ours.

2. The Rhine riſes in the Alps, runs north through Switzerland, and ſoon after dilates itſelf into a large lake, called the Boden Sea, or Lake of Conſtance, then weſt, to Baſil, and runs north between Swabia and Alſace, into the Palatinate, receiving the Neckar at Manheim, and the Main, at Mentz ; it afterwards receives the Moſelle, paſſes through the duchy of Cleves, and entering the Netherlands, where it divides into ſeveral branches, empties itſelf in the German ocean. The whole courſe of this noble river is about 400 miles, and including its turnings, about 600.

3. The Elbe takes its riſe in Sileſia, runs north-weſt through Bohemia, Saxony, and Brandenburg, paſſes by Magdeburgh, Lawenburg, and Hamburg, and a little below Gluckſtat, divides itſelf into two branches, and falls into the German ocean 60 miles below Hamburg. Its courſe is about 500 miles.

4. The Oder ſprings in Moravia ; and after a courſe of 300 Engliſh miles, through Sileſia and Brandenburg, falls into the Baltic ſea, between Swediſh and Brandenburg Pomerania.

5. The Weſer riſes in the mountains of Thuringen, runs through Heſſe and Weſtphalia, and after a courſe of above 250 miles, empties itſelf into the ocean, forty miles below Bremen.

The ſoil of this country, eſpecially on the banks of the Rhine and the Danube, are exceeding fruitful, where alſo the air is very temperate: but in the northern parts it is colder, and the ground leſs fruitful. In thoſe provinces that lie next the ſea, there is plenty of rain; in other parts, at a diſtance, there are confiſiderable droughts. The north winds from the Baltic and Sweden bring froſts and ſnow. The eaſtern winds from the continent bring dry and unwholeſome weather: the ſouth, in ſummer, bring refreſhing breezes from the Alps; but the ſouth-weſt winds are both the moſt frequent and wholeſome that blow in Germany.

There is plenty of corn, cattle, ſheep, wool, cloth, horſes, fiſh, &c. In general, the face of the country is even, except towards the ſouth and ſouth-weſt, where the Alps ſerve as boundaries and bulwarks againſt France and Italy.

SECT. II.

A particular Account of the moſt curious natural Productions of Germany, Bohemia, Hungary, *and* Switzerland, *in the Animal, Vegetable, and Foſſil Kingdoms; of remarkable Mountains and Caverns; of Medicinal and other ſingular Springs; of Lakes, Cataracts, and other natural Objects of Curioſity.*

ANIMALS, VEGETABLES, and FOSSILS.

IN theſe countries we meet with nothing remarkable in the animal or vegetable kingdoms, except the elk be eſteemed ſuch. This animal is a native of Tranſylvania, and is a ſpecies of the *Cervus*, or deer kind, diſtinguiſhed by having the horns palmated, and without a ſtem. It is a very large and ſtrong animal, equal to a well-ſized horſe in magnitude, and not inferior in ſtrength; tho' a much leſs beautiful creature; the head is large and oblong, very broad at the forehead, and tapering to the noſe, where it is ſmall but obtuſe; the mouth is large, the lips thick, and the teeth ſtrong; the eyes are moderately large, but they do not ſtand prominent; the ears are remarkably large and long; they, in this reſpect, reſemble thoſe of the aſs; and indeed, the ſemale elk is not greatly unlike that creature in her general figure; the ears are nine inches in length, and four in breadth, and are erect and patulous; the horns are not tall and ramoſe, in the manner of thoſe of the deer kind, but they ariſe with a thick and ſhort trunk, which almoſt immediately ſpreads into a vaſt breadth, and this expanſion, which reſembles, in ſome degree, an open hand, is ornamented at the extremity with denticulations, reſembling fingers; the neck is ſhort and thick, the body is large, and the back broad and flatted; the legs are extremely robuſt; the horns in the male, for the female has none, refer the creature at ſight to the ſtag claſs: but the bulk of the body, and the general proportions, if the female alone were examined, would not lead any one to think it ſuch. The body is covered with a thick deep fur, the hairs are rigid, and very firm; the colour of the whole creature is a duſky browniſh grey, only the belly is ſomewhat paler, and the legs darker than the reſt: the hoofs are divided exactly in the manner of thoſe of the ſtag, and are ſuppoſed to have a great virtue in nervous diſorders. It is a native of ſeveral other parts in the north of Europe, bears the frozen countries very well, and runs upon the ice in a ſurpriſing manner.

Germany and the other countries included in this chapter, abound with metals and minerals of various kinds, and contain ſome remarkable mines: among which may be reckoned the ſalt mines near Eperies, in Upper Hungary, which are 180 fathoms deep, and the ſalt runs in ſuch large veins, that they ſometimes dig pieces not leſs than ten thouſand weight; but theſe are uſually cut into ſquare pieces, two feet long, and one foot thick, for the convenience of drawing them out of the mine. The colour of the ordinary ſtone is ſomewhat grey, but when it is broke, and ground for uſe, it becomes as white as if it was refined. Some of the ſalt is of a delicate blue, ſome yellow, and ſome as hard and tranſparent as cryſtal, which is wrought into various little toys and utenſils. The water of this mine, when boiled, yields a blackiſh ſalt, which they give to their cattle.

A curious naturaliſt cannot help admiring in thoſe pits, the flowers of ſalt, which grow like the beard of a goat, but much whiter and finer; but they are not to be found in all the cuts, nor at all times, only appearing according to the temperature of the ſeaſon. Theſe plumes of ſalt are very brittle, will melt in moiſt places, and diſſolve into a volatile oil; but they are the pureſt, whiteſt, moſt acid, and beautiful ſalt that can be imagined. Another thing remarkable in this mine is a chapel, big enough to contain a hundred people, with an altar, pulpit, ſacriſty, and ſeats, all cut out of a rock of ſalt. In this chapel divine ſervice is celebrated once a year, a Jeſuit of Eperies always preaching the ſermon.

Near Hallein, in the archbiſhopric of Saltzbourg, in Germany, there is a high mountain, the earth of which is mixed with a ſort of allum or ſalt-petre, which being laid for three or four weeks in large trenches filled with freſh water, the earthy part ſubſides, and the water is then drawn off and boiled in large iron pans, till it is quite evaporated, and leaves the ſalt at the bottom. This mountain is pierced in a thouſand places, ſo that guides are neceſſary to conduct ſtrangers who have the curioſity to viſit this ſubterraneous labyrinth, which is ſeldom done without a great deal of ceremony. Before they enter theſe works, they generally repair to a church upon the mountain to perform their devotions, after which they breakfaſt at a public houſe near the church, and being furniſhed with proper dreſſes and other neceſſaries, every one takes a lighted candle or torch in his hand, and ſome of the guides go before and others behind the ſpectators, leſt they ſhould be frightened or loſe their way in theſe diſmal caverns.

Hungary is famous for its gold and ſilver mines; the richeſt gold mine is that of Chremnitz, which is about 160 fathoms deep, is ſeveral Engliſh miles in length, and has been wrought above 900 years. The veins generally run north or eaſt, and the miners direct themſelves under ground by a compaſs. Some of the paſſages in this mine, cut long ago through the rocks, by being diſuſed are quite cloſed up again, and others are become very narrow, the rocks growing and uniting by degrees, eſpecially in moiſt places. Pieces of pure gold, of a conſiderable ſize, have been ſometimes found in this mine; but the gold is generally bedded in a ſort of ſtony glebe, or ore of ſeveral colours, ſome white, ſome black, red, or yellow, ſome white with black ſpots in it, which is eſteemed the beſt; nay, the common yellow earth of the country about Chremnitz affords ſome gold, and has been waſhed and wrought with conſiderable profit.

They have various methods of ſeparating the gold from the ore, but the moſt uſual one is this: after the ore is broke and pounded very ſmall, they lay it upon fine cloths, waſhing and ſtirring it about till the earthy and lighter parts are waſhed away, and the heavier metalline parts are left behind. Theſe cloths are afterwards waſhed clean in ſeveral tubs, and the water, when ſettled, is poured off from its ſediment; which ſediment is again waſhed and ſtirred about, till at length they add quickſilver to it, kneading it well together, and then waſhing it again in a wooden veſſel. The gold and quickſilver being thus mixed together, they ſtrain off as much of the quickſilver as they can, firſt through coarſe and then through fine cloths, and the remaining maſs is laid upon a perforated plate, ſet over a deep pan fixed in the ground, in the bottom of which they alſo put ſome quickſilver. This pan is covered over, and the cover well luted; and a charcoal fire being made upon it, the quickſilver yet remaining in the gold is driven down to that in the bottom of the pan. The gold is then taken out and thrown into the fire, when it undergoes a farther purification.

Of the ſilver-mines in Hungary, thoſe at Schemnitz are the moſt conſiderable. They are ſix in number, one of which, called Trinity Mine, is ſeventy fathoms deep, and being of an earthy ſoil, its ore is much eſteemed. In another of theſe mines is a large wheel, twelve yards in diameter, which is turned by the fall of ſubterraneous waters, and works engines that raiſe the water from the bottom of the mines up to the place where the wheel is fixed; which water, together with that which turns the wheel, runs out at the foot of a hill through an opening cut for that purpoſe. The ore that is of a blackiſh colour is eſteemed the beſt, and much of it is mixed with a ſhining yellow ſubſtance, which, if not in too great quantity, renders the ore more eaſily fuſible: but as the ore found in theſe mines differs in its mixtures, ſo alſo does it in its richneſs, ſome of it yielding half ſilver, though this is very rare, ſome of it twenty ounces, and ſome of it not above an ounce in a hundred weight. To ſeparate the ſilver, the ore is melted in a furnace, from whence the metal runs into a pan placed in the earth before it, and there acquires a hard ſcum or droſs, which they take off, and add lead to the remaining ſilver. This being again melted in another furnace, the lead, and what other mixture may yet remain in the ſilver, ſwims on the top like oil, is blown off by bellows, and becomes litharge, which is of a paler or deeper colour according to the time it continues in the fire, or the degree of heat it undergoes.

In the neighbourhood of Fridberg in Saxony, there are mines of ſeveral ſorts of metal, and particularly ſome of ſilver, which yield ſuch quantities, that the elector's profit ariſing from them is ſaid to amount to 130,000l. per annum. The chief of theſe mines is above 200 fathoms deep, and was formerly ſo rich, that an hundred weight of ore produced ſixty pounds of ſilver, but commonly a pound of ore yields an ounce and a half, or thereabouts. It is computed, that ſince the firſt opening of this mine, about the end of the twelfth century, it has yielded above a hundred millions of ſilver. Theſe mines are ſubject to damps, which ſometimes kill the workmen; and the duſt, which ſettles on their lungs, frequently throws them into conſumptions; but they wear vizards with glaſs eyes, to prevent as much as poſſible its annoying them.

Beſides theſe precious metals, the mines of Germany and Hungary afford many other curious and uſeful foſſils. In thoſe of Saxony juſt mentioned, there is found a kind of ſulphur ore or pyrites, which being broken into ſmall pieces, and thrown into earthen veſſels placed in proper furnaces, the ſulphur contained in the ore is melted by the fire, and runs out through a narrow hole into leaden veſſels filled with water, where it concretes immediately, and the ſubſtance which remains behind contains a conſiderable quantity of vitriol. The ſulphur is purified by melting it a ſecond time in iron veſſels, and boiling it with the addition of ſome linſeed oil; after which it is either made up in large lumps, or poured into cylindrical moulds, and ſo formed into rolls. Thus prepared, it is called brimſtone; and vaſt quantities of this kind of ſulphur are yearly made in Saxony, and tranſported into all parts of Europe.

Sulphur vivum, or native ſulphur, is likewiſe found in the mines of Germany, Switzerland, and Hungary, ſometimes in tranſparent pieces of a beautiful yellow colour; but the coarſe, opake, greyiſh kind, is moſt common, being uſually found in flat maſſes of various ſizes, and ſometimes in whole ſtrata of a conſiderable thickneſs. Sulphur is alſo found in the form of a fine yellow powder, adhering to the ſtones and wood about the baths of Aix-la-Chapelle in Weſtphalia, thoſe of Buda in Hungary, and other ſulphureous ſprings; in which ſtate it very much reſembles the common flower of brimſtone.

Native vitriol is a kind of foſſil ſalt, not uncommon in the German and Hungarian mines; and particularly in thoſe of Goſlar in Saxony there is a fine green vitriol, very bright and tranſparent, found in the clefts of the rocks in great abundance. In theſe mines there is alſo a white vitriol, ſometimes found in pieces of a compact ſubſtance, but moſt commonly in form of a downy efflorеſcence on the tops and ſides of the caverns, which being diſſolved in water, is afterwards boiled till it concretes into a white maſs like ſugar, and is then formed into thoſe large cakes in which we receive it from abroad. There is another vitriol of a bluiſh green, which is ſometimes found in the mines of Saxony, but more frequently in thoſe of Hungary and Tranſylvania; and Dr. Brown mentions a red vitriol in the gold mines of Chremnitz, which perhaps is the chalcitis of the antients. Theſe vitriols owe their origin to iron or copper, diſſolved by the acid of ſulphur and water, and again concreted into the forms wherein they are found. The green colour is derived from iron, the blue from copper, and the white and red proceed from a mixture of ſome other ſubſtances.

In the neighbourhood of the copper-mines in Hungary, and ſometimes in the mines themſelves, there are found ſmall ſtreams of clear vitriolic water, in which, if a piece of iron be put, and immediately taken out again, it is found covered with a thin cruſt of copper; and if the iron remain long in the water, it is gradually diſſolved, and the copper precipitated and left in its place. This water being boiled to a proper conſiſtence, and ſet to cryſtallize, yields a beautiful blue vitriol, ſhooting into regular figures, conſiſting of ten ſides, in which form we find it in the ſhops. Theſe cryſtals, if wetted and rubbed on the blade of a knife, give it the colour of copper, that metal being the baſis of this vitriol.

We ſhould far exceed our limits, if we ſhould attempt a deſcription of all the foſſils to be found in the mines of Germany, Hungary, and Tranſylvania, ſuch as antimony, biſmuth, orpiment, and a great variety of others. Hungary has mines of quickſilver, which afford great quantities; but thoſe in the county of Goritia, a part of the province of Friuli, belonging to the houſe of Auſtria, are perhaps the richeſt of the kind in Europe, the ore generally containing half, and ſometimes two thirds of quickſilver. Theſe mines are at Idria, and the entrance into them is in the town itſelf, from whence, to the deepeſt part, is above 120 fathoms. The quickſilver is ſometimes found in its native ſtate, lodged in the cavities of the ſtones, and guſhing out in a ſtream when the miners break them, and this is called virgin quickſilver; but it is more uſually found in the form of ore, which is pounded and waſhed, and diſtilled in large iron retorts, from whence the mercury comes over pure into the receiver. Eight hundred retorts are employed at a time in the furnaces belonging to the mines of Idria; and we may judge of the vaſt quantities of quickſilver procured from theſe mines, by what Dr. Brown tells us, viz. that when he was there, he ſaw in the caſtle above 470 tons of it in barrels; and in another place as much ore as would take up two years to diſtil.

The mines of Bohemia and Sileſia yield conſiderable quantities of gold and ſilver, as well as of the baſer metals; and thoſe of Bohemia and Sileſia abound more with agates, garnets, ſapphires, amethyſts, and other precious ſtones, than any part of Germany, or indeed of Europe.

On the coaſts of Brandenburg Pomerania, as well as on thoſe of Pruſſia, is found a very hard inflammable ſubſtance called amber, and by naturaliſts *ſuccinum* and *electrum*, of one uniform ſtructure, of a bituminous taſte, a very fragrant ſmell when rubbed, and highly endowed with the property from it called electricity. Amber is thrown up by the ſea in thoſe parts, and is not only found among the ſea-weeds and ſand, but alſo dug out of the rocks and mines. It is a hard, dry, tranſparent, toughiſh, though brittle ſubſtance, of a ſtyptic taſte, and, when warm, of a peculiar fragrant tartiſh ſmell. It makes no effervеſcence with acids; and when rubbed ſo as to heat, it will attract ſtraws, bits of paper, or any other light ſubſtance, and even metals in thin pieces, as leaf-braſs and the like. It is one of the lighteſt foſſils we know, is ſoluble in ſpirit of wine, in the eſſential oils of plants, and likewiſe, though with much difficulty, in ſome of the expreſſed oils, as that of linſeed. On a chemical analyſis, it yields at firſt a ſubacid water, and afterwards a yellow fetid oil, and a volatile ſalt; the remainder in the retort being a black, light, and friable matter, reſembling in colour, the *bitumen judaicum.*

Natural hiſtorians have been greatly in the dark about the origin of amber. Some have maintained it an animal ſubſtance; others have taken it for a reſinous juice, oozing from poplars and firs; and the generality of authors contend for its being a bitumen, which trickling into the ſea from ſome ſubterranean ſources, and there mixing with the vitriolic ſalts, which abound in thoſe parts, becomes congealed and fixed, the reſult of which congelation is amber. However, as good amber is found in digging at a great diſtance from the ſea, it is moſt probable that it is wholly of mineral origin, and is a bitumen, once liquid, of the naphtha or petroleum kind, hardened into its preſent ſtate by a mineral acid, of the nature of ſpirit of ſulphur, or oil of vitriol, more eſpecially as theſe ſubſtances abound in the earth, and an artificial mixture of them produce a body very much like native amber, and affording all its principles on a chemical analyſis. The natural colour of amber is a fine pale yellow, but it is often made white, ſometimes black, and in both caſes is rendered opaque by the admixture of extraneous bodies. Sometimes it is tinged with metalline particles, and remains pellucid; but the moſt frequent variation from the yellow, is into a duſky brown.

MOUNTAINS *and* CAVERNS.

THE principal mountains of theſe countries are the Alps, which divide Germany from Italy, on which Switzerland lies, and by a particular chain of which, almoſt every canton of that country is ſeparated from another. The Alps have been already taken notice of in the laſt chapter, among the mountains of Italy, and ſome of their peculiarities deſcribed; but as nothing has been ſaid in particular of their height, and as the mountains of Switzerland are generally allowed to be not only the higheſt part of the Alps, but the higheſt mountains in Europe, it may not be improper to ſay ſomething upon that ſubject in this place.

The Joch, a high mountain in the territory of Engelberg, where it borders upon the canton of Bern, has been found to be five thouſand nine hundred and twenty-ſix feet above the level of the ſea: and yet this is far from being the higheſt mountain in that neighbourhood; for next to it riſes another, called Titliſberg, covered with perpetual ſnow, which is at leaſt a thouſand feet higher than the Joch, and indeed one of the higheſt in the country.

The Gemmi is a very lofty mountain, over which there is a paſſage in the ſummer, from the canton of Bern to Leuck in Valeſia. The deſcent on the ſouth ſide of this mountain is ſteep and frightful beyond deſcription, being a narrow path cut on the ſide of almoſt perpendicular precipices, and ſometimes we croſs over the clefts in the rocks on planks, or ſhaking wooden bridges. The height of this mountain, at a cottage called Zur Dauben, a reſting-place for weary travellers, appears to be ſix thouſand and twelve feet, being the higheſt part of it that is paſſable.

As to the Avicula, the St. Gothard, the Furca, the Grimſula, the Criſpalt, and a long chain of other mountains, which begin in the upper Valois, traverſe the canton of Uri, and ſo run acroſs the country of the Griſons, towards Tyrol, their greateſt height above the level of the ſea may be fixed, in round numbers, at ſeven thouſand five hundred, or eight thouſand feet.

But the higheſt of all the mountains of Switzerland, according to Scheuchzer, is the Stella, or Piz Stail, in the country of the Griſons, the perpendicular height of which, according to the Doctor's obſervations, is nine thouſand five hundred and eighty-five feet; or twelve thouſand one hundred and ninety-ſix, according to Caſſini, a height which the Chamois themſelves ſcarce venture to aſcend.

On the other hand, Mr. Martel thinks the White Mountain, which is ſeen from the banks of the lake of Geneva, at fourteen or fifteen leagues diſtance, to the ſouth-eaſt, to be the loftieſt mountain of all the Alps, and to be twelve thouſand four hundred and fifty-nine feet above the level of the Rhone at Geneva. M. de la Condamine thinks this by much the higheſt mountain of the Alps; the upper half of it is always covered with ſnow; and M. Fatio de Duillier, who meaſured its height geometrically, makes it at leaſt two thouſand toiſes, or twelve thouſand Paris feet above the ſurface of the lake, and the lake four hundred and twenty-ſix toiſes, or two thouſand five hundred and fifty-ſix feet above the level of the ſea, according to a calculation founded on the declivity of the Rhone, from its diſcharge out of the lake; and thus the height of the White Mountain is, according to M. Fatio, two thouſand four hundred and twenty-ſix toiſes, or fourteen thouſand five hundred and fifty-ſix Paris feet above the ſea, which M. de la Condamine obſerves, amounts within a very little to the height of the craggy ſummit of the volcano of Pichincha, near the city of Quito in Peru, in South America.

But M. de Chezeaux, who meaſured a much larger baſe than M. Fatio, and who ought therefore to have attained a preciſion as much greater in the heights which he had deduced from thence, increaſes ſtill the altitude of the White Mountain two hundred and fifty toiſes, or fifteen hundred Paris feet; that is, upwards of five hundred toiſes, or three thouſand feet higher than the Pike of Teneriffe, which paſſed for the higheſt mountain of Europe. The White Mountain is alſo ſeen from the environs of Langres,

gres, at ſixty leagues diſtance, from whence they diſtinguiſh its ſummit covered with ſnow above the chain of mount Jura.

Mount Cenis is another of the Alps which paſſes for one of the higheſt mountains in Europe.

The mountain of St. Gothard, in the canton of Uri, is a very important paſs to Italy, and is thus deſcribed by Dr. Scheuchzer: the road over it is partly pleaſant, and partly rugged and dangerous. In the lower parts of the mountain are beautiful foreſts of trees, riſing one above another, through which there is juſt a glimmering proſpect of the foaming Ruſs, roaring along with an impetuous courſe, after being joined by rivers that fall from the mountains. Of theſe, ſome deſcend with a gentle murmur, and others rattle down the precipices with a frightful noiſe, while many of them, by reaſon of the rocks that obſtruct their paſſage, are reſolved into miſt, which, by the refracting rays of the ſun, form a variety of wonderful rainbows. As the traveller advances, he is terrified at the view of frightful rocks hanging over the road, and ſo worn out underneath, as if they were juſt going to fall, and cruſh him to atoms.

About half way down the mountain of St. Gothard is a hollow, over which nature has formed a ſort of bridge of ſnow and ice, perfectly hardened, under which the Teſſin runs with a great noiſe; and the bridge, trembling under the feet of paſſengers, has obtained the name of the trembling valley.

In the canton of Glaris is a lake, called Wahleſtatt, which is ſurrounded with mountains, whereof one that ſeparates this canton from the country of the Griſons, has a hole pierced through it near the top, called St. Martin's hole. Through this hole the ſky may be ſeen on a certain part of the lake; and it is the only inlet of the ſun-beams, upon a ſmall village called Elm, for four weeks together, about the time of the equinox, every ſpring and autumn, when the ſun tranſmits his rays upon this village through St. Martin's hole, as through a natural teleſcope. In the canton of Bern there is another mountain, called the Eyger, pierced in like manner, with a large hole near the top, through which the rays of the ſun paſs for two or three weeks in February and October.

Mount Broeken in Brunſwick, is reckoned one of the higheſt mountains in Germany. Between Blankenburg and Elbingrode, not far from Broeken, is a remarkable cavern, called Buman's hole, from one Buman who diſcovered it. The entrance of this cave is very narrow, but the extremity of it has never yet been diſcovered, though ſome of the miners in the neighbourhood have affirmed, that they have travelled upwards of twenty miles through it. Large bones of ſtrange animals have been found in this cavern, among which was a gigantic ſkeleton.

There are two great rocks near the convent of Michaelſtein, in the ſame duchy, which repreſent two monks in their proper habits, as neat as if they had been carved out, and are therefore called the Monks craigs. Many caſtles are found in theſe countries, on the tops of inacceſſible rocks, and ſome actually hewn out of the rocks.

MEDICINAL SPRINGS, *and other* SINGULAR SPRINGS, LAKES, *and* CATARACTS.

GErmany, Hungary, and Switzerland, are famous for mineral waters of various qualities: but of all the medicinal ſprings in theſe countries, none appears to have obtained a greater reputation than the ſprings of Spa, or Spaw, in the biſhopric of Liege in Germany, which are not only reſorted to by people from moſt parts of Europe, but great quantities of the water, ſealed up in bottles, are ſent into other countries, particularly into Great-Britain and Holland. In the town of Spaw, and its neighbourhood, there are five ſprings, which are more frequented than the reſt; but the waters of the Pouhon ſpring, in the market-place, are moſt eſteemed, being preferred by the beſt phyſicians to all the mineral waters in or near the biſhopric.

The celebrated ſprings of Pyrmont in Weſtphalia, are much of the ſame nature with thoſe of Spaw, and are even preferable in many caſes. At the proper ſeaſon there is a great reſort of the nobility of Germany, as well as others, to drink the Pyrmont waters, which are alſo exported abroad in large quantities from Bremen, to which place they are carried by the river Weſer.

As the waters of Spaw and Pyrmont are in the greateſt repute for drinking, ſo thoſe of Aix-la-Chapelle, in Weſtphalia, are perhaps the moſt noted for bathing of any in Germany, being much frequented by the Engliſh and other nations. The principal baths in the Old Town, are the Emperor's bath, the Little bath, and that of St. Quirinus, in the firſt of which the emperor Charlemagne uſed to bathe with his ſons and nobles, being then all in one, whereas it is now divided into ſeveral apartments. The ſprings that fill theſe baths riſe ſo hot, that they let them cool ten or twelve hours before they are uſed. They are impregnated with nitre and ſulphur, are at firſt unpleaſant to the taſte, and of a diſagreeable ſmell. Thoſe in the New Town, which are the Roſe bath, the Poor's bath, and St. Corneille's bath, are not ſo hot and clear as the former: but with reſpect to their ſmell and taſte, there is not much difference. Near the hot ſprings lie ſeveral cold

ones,

ones, and there is one moderately warm, much reſorted to in ſummer mornings, and drank for chronical diſeaſes.

In a village near the town are many other hot baths, the water of which is clear and pleaſant, without any diſagreeable ſmell; and here people of all ages and conditions bathe freely, not only for health, but for diverſion. The ſprings of this village and thoſe of the city are ſo plentiful, that it is computed they yield every day ſix thouſand tuns of water. The firſt ſeaſon for theſe baths begins in May, the ſecond in Auguſt.

The town of Baden in Switzerland, has been long famous for its hot baths, and to them it chiefly owes its flouriſhing condition. They are about half a mile from the town, and are ſupplied from ſeven ſprings by the ſide of the river Limmat, whoſe waters contain a great deal of ſulphur, with a mixture of alum and nitre. They are uſed for drinking as well as bathing.

The hot baths of Baden in Swabia, whoſe waters proceed from rocks of ſalt, alum, and brimſtone, are reckoned an infallible remedy for the cramp, gout, and other nervous diſtempers, on which account they are much frequented. Some of them are very hot, particularly one called the Kettle, the water whereof boils and ſmoaks as if it were over a furnace.

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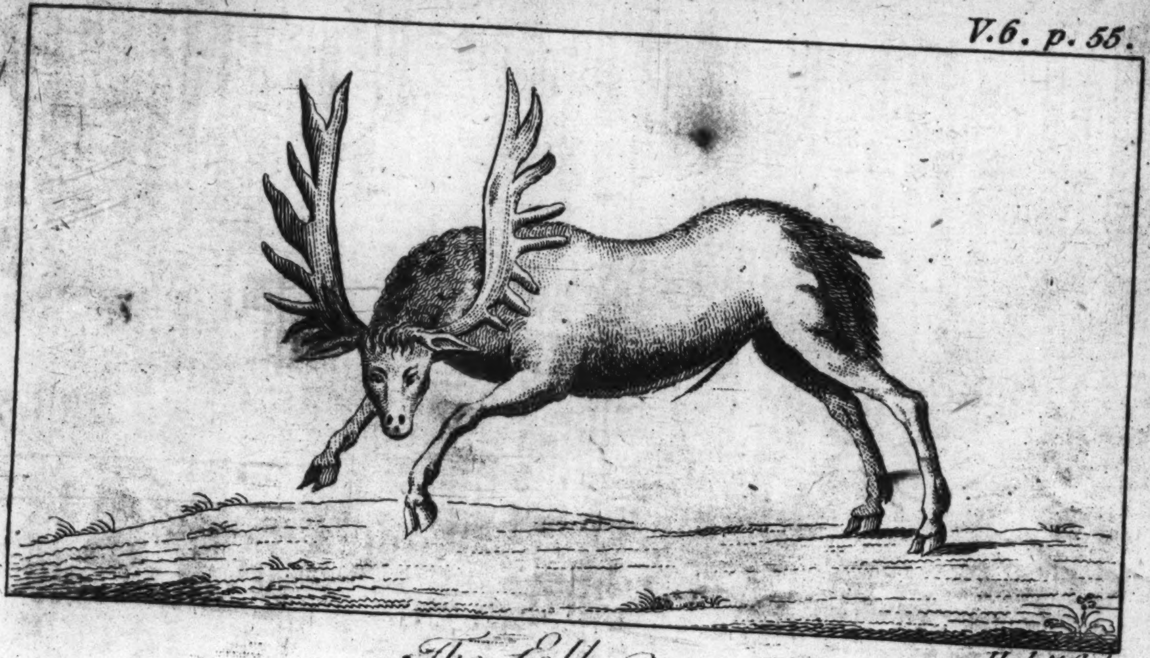

The Elk

Hulett sculp

The baths of Buda in Hungary, are eſteemed the fineſt in Europe for plentiful ſprings and magnificent buildings. Some of the waters are fit either for bathing or drinking, but ſeveral are ſo hot that they cannot be uſed without conveying them to cool into other baths, or mixing them with cold water. They have a ſulphureous ſmell, and are of a petrifying quality. Here is a cold bath ſo near to a hot one, that a man may put his hand from one into the other.

It is ſaid here are fiſh in ſome baſons or ponds of hot water, which being thrown into the neighbouring Danube, or other cold water, die immediately.

There are a great many other ſprings in theſe countries, which are remarkable for their medicinal virtues, but of which the brevity neceſſary to be obſerved on this article will admit of no particular mention.

In the Philoſophical Tranſactions we have an account of a ſtrange ſpring near Paderborn in Weſtphalia, which loſes itſelf twice in twenty-four hours, but returns with a great noiſe, and with ſuch force, that the ſtream turns three mills a little below; for which reaſon, it is called the *Bolder Born*, or *Boiſterous Spring*. There is alſo an account of another remarkable ſpring, near the ſame city, which ſends forth three ſtreams at a little diſtance from each other; one of which is limpid, bluiſh, lukewarm, and im-

impregnated with vitriol, alum, ſulphur, and other minerals; the ſecond with much the ſame taſte, but turbid, whitiſh, and cold as ice; and the third taſting both ſour and ſweet, but very clear, and of a greeniſh colour.

The Danube has ſeveral conſiderable cataracts, the moſt remarkable of which are the Saw Ruſſel, or Swine's Snout, near Lintz, ſo called from a prominent rock, which has under it a dangerous whirlpool; and another called Der Strudel, where the falling of the water makes a dreadful noiſe.

The Rhine has alſo its navigation interrupted by ſeveral cataracts, the moſt dangerous whereof are two in Switzerland; the one near Schaffhauſen, where the whole river falls ſeventy or eighty feet; the other at Lauffen, about a league below, where the water is precipitated down the rocks, with ſuch a prodigious violence, that the noiſe may be heard in a calmn night, at the diſtance of twelve or fifteen miles. Here the goods put on ſhore at Schaffhauſen, and brought hither by land, are taken in by other veſſels to proceed down the river.

Of the natural curioſities of Germany, there is perhaps none more ſurpriſing than the Zirchnitzer Sea or lake in Carniola, ſo called from the neighbouring town of Zirchnitz. This lake is four or five miles in length, and about two in breadth, ſurrounded at ſome diſtance with woody mountains, which are full of deer, wild boars, hares, and other game. In the months of June, July, or Auguſt, the water of this lake ſinks under ground through many large holes at the bottom, leaving it quite dry till October or November, at which time it commonly returns, ſpouting out of the ſame holes with ſuch violence, that it ſometimes covers the whole vale in twenty-four hours, though at other times it has been known to be three weeks in filling; but it is a conſtant obſervation that thunder and lightning contribute much to fill it ſpeedily. The water, however, with reſpect to its retreat and return, does not obſerve any certain period; for ſometimes the lake has been dry twice or thrice in a year; ſometimes again, though ſeldom, it has happened to be three or four years together full of water, but was never known to be dry for a whole year together. The principal pits or holes through which the water retires, are eighteen in number, and at theſe holes the fiſhermen lay their nets, and take vaſt quantities of fiſh, which would otherwiſe be carried under ground with the water. The prince of Eckenberg, who is lord of this lake and the adjacent country, will permit nobody to fiſh in it when it is full; but when a certain ſtone appears, which ſhews that the water is ſinking, all thoſe who have a right of fiſhing, have notice given them to prepare for their buſineſs. The pits grow dry one after another, according to their ſituation, and the loweſt of them is generally evacuated in twenty-five days from the beginning of the receſs of the water, which is the time the fiſhing continues. When it is over, a ſignal is given by tolling a bell, upon which all the inhabitants of the neighbouring villages, and of Zirchnitz, without diſtinction of age or ſex, go into the lake, and look for fiſh among the weeds and ſedge, and in the ſmaller pits; and many of them find abundance of large fiſh by creeping into the ſubterraneous caverns and paſſages. The fiſh taken here, which are well-taſted, are chiefly eel-pouts, ſome of them weighing two or three pounds; tench, ſome weighing ſix or ſeven pounds; and pikes in great plenty, of ten, twenty, thirty, or even forty pounds; and it is uſual to find whole ducks in the bellies of the latter: large crabs are found in ſome of the pits, but they are ill-taſted.

The lake, being thus alternately wet and dry, is of great ſervice to the neighbouring inhabitants; for while it is full of water, it is frequented by wild geeſe, wild ducks, ſwans, and other fowls; and when it is empty, it affords them graſs for the preſent ſuſtenance of their cattle, and hay for the winter. After the hay is got in, they plow the ground and ſow millet, which is ſometimes deſtroyed by the too ſudden return of the water, but generally comes to maturity. Whilſt the millet is on the ground, they catch a great number of quails, and all the time the lake is dry they have the diverſion of hunting and killing the game that reſorts to it from the adjacent woods and mountains. Laſtly, when the water retires they take abundance of fine fiſh, as before obſerved; and being generally frozen over in winter, ſo as to bear all ſorts of carriages, it is very convenient to the people for fetching their wood and other neceſſaries.

M. Valvaſor accounts for the wonderful phænomena of this lake in the following manner: There is, he ſuppoſes, under the bottom of the lake another ſubterraneous one, with which it has a communication by the ſeveral holes abovementioned. There is alſo a lake under a neighbouring mountain called Javornick, whoſe ſurface is higher than that of the lake of Zirchnitz, and which is poſſibly fed by ſome rivulets that bury themſelves under ground, which are common in that country. When this upper lake is ſwelled by great or ſudden rains, it finds ſeveral caverns in the mountain higher than its uſual ſurface, through which it flows into the lake under that of Zirchnitz, from whence it riſes through the holes in the bottom of that lake; which water again falls away after a long drought, when the ſprings that feed the upper lake under Javornick are much decreaſed. That the waters of theſe lakes are carried off by ſubterraneous paſſages, and form a river on the other ſide of the mountain, M. Valvaſor has alſo made appear beyond diſpute.

It is remarkable, that ſome of the paſſages through which the water aſcends about the lake of Zirchnitz throw up ducks as well as fiſh, which fowls are ſuppoſed to be produced in the lake under Javornick. When they firſt come out they ſwim, but are quite blind, and have few or no feathers, ſo that they are eaſily caught; but in a ſhort time they recover their ſight, and in fourteen days they are fledged, and fly away in flocks. They are black, only white on the forehead, and about the ſize of the common wild duck. They are well-taſted, but too fat.

It is obſerved that in the mountain near this lake there are two very deep holes or precipices, in which wild pigeons rooſt all winter, and come out in the beginning of the ſpring; but what they live upon in theſe caverns is unknown.

The lake of Geneva is in ſeveral reſpects one of the moſt remarkable in Europe. This lake is ſhaped like a creſcent, one of whoſe extremities is eighteen leagues diſtant from the other, and in the broadeſt part it is about five leagues over. Its depth is very ſurpriſing, being in ſome places, particularly before Rolle, not leſs than five hundred fathoms; and thereabouts, it is ſaid, a kind of iſland may be ſeen under water. The Rhone enters the lake at one of the points of the creſcent, and iſſues out at the other, but with this difference, that whereas it comes in muddy and turbid, it always goes out ſo pure and clear, that under the bridge of Geneva, where the water is twenty-five feet deep in ſummer, one may ſee the ſmalleſt ſtones at the bottom. This river, upon entering the lake, loſes its rapidity, but ſome ſenſible motion is here and there obſerved, by which its current is diſtinguiſhed; and ſoon after its coming out of the lake it reſumes its rapid courſe, which, as its bed becomes narrower, grows conſequently more impetuous. The lake is always higher in ſummer than in winter, by twelve or fifteen feet, commonly beginning to increaſe about the end of January, and continuing to do ſo till July or Auguſt; which is generally attributed to the melting of the ſnow and ice from the neighbouring mountains, though probably there is a concurrence of other cauſes. In calm weather, and even before ſun-riſing, the lake ſometimes appears as if it conſiſted of ſeveral pieces differently coloured, which is thought to proceed from the different images of the adjacent mountains blended together in the water; and there is one part browner than the reſt, which is owing to a gentle agitation of the water, cauſed either by a breath of wind paſſing through it, or as ſome think, by ſprings at the bottom, imparting a tremulous motion to the ſurface. The lake is plentifully ſtored with fiſh, and it is obſervable that the different ſpecies ſeem to have cantoned themſelves as it were, and to have divided it amongſt them; trouts being only found in the current of the Rhone, carp near Vevay, &c. but ſome fiſhes that are only paſſengers, and not inhabitants of the lake, ſpread themſelves all over it indifferently. The trouts taken here are very large, ſome of them weighing fifty pounds; and ſometimes they catch pikes of eighty pounds weight, and the pound at Geneva is eighteen

ounces.

ounces. There are many other lakes of conſiderable extent in theſe countries; which, as they are not remarkable for any curioſity, it is not neceſſary to take particular notice of.

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SECT. III.

An Hiſtorical Account of the moſt remarkable Earthquakes, Inundations, Fires, and other public Calamities, which, at different times, have viſited the Inhabitants of Germany, Bohemia, Hungary, *and* Switzerland.

IT does not appear that theſe countries have ſuffered much from earthquakes: we are however told, that, about a century ago, an earthquake happened at Lauſanne, in the canton of Berne in Switzerland, which rent the wall of the great church in that city from top to bottom: but what is moſt remarkable was, that, about ten years afterwards, there happened another ſhock of an earthquake, which cloſed up the rent in the church wall, though it was above a foot wide, ſo as to be ſcarcely diſcerned. Mr. Addiſon was told, on his journey through this city, that there were ſeveral perſons then living who had paſſed through the rent.

The town of Chiavenna, in the county of the ſame name, in the territories of the Griſons, in

Switzerland, ſtands upon the river Maira, and was formerly much larger than it is now, all the north part of it having been buried by the fall of a mountain, in the twelfth century.

Pleurs, a town north-eaſt of Chiavenna, and near the ſame river, was, about two centuries ago, totally deſtroyed by an inundation of water; upon which, ſuch of the inhabitants as ſurvived the deſtruction of their town, removed to the banks of the river Maira, about a league from Chiavenna, where they built a new town, which, in time, was well inhabited, and reckoned one of the fineſt towns in Italy: but on the 25th of Auguſt 1618, it was deſtroyed by as fatal and ſudden an accident as any recorded in hiſtory: for part of a neighbouring mountain, having ſeparated from the reſt, and falling upon the town, buried it with all its inhabitants, conſiſting of between 1500 and 2000 perſons. The inhabitants of Chiavenna knew nothing of this cataſtrophe, till they perceived the river ſink: the uſual channel having received no water for upwards of three hours, becauſe the mountain, by its fall, had changed the uſual courſe of the river. Among the other buildings overwhelmed by this ruin was a moſt magnificent palace, belonging to the family of Francken, which coſt ſeveral millions of crowns; and here were a great many other noble ſtructures, built by the rich factors of Milan, who choſe this for the place of their retirement, and who, it is ſaid, led a riotous and luxurious life. Dr. Burnet was told, that a Proteſtant miniſter warned them ſrom the pulpit of the terrible judgment which he believed would break out upon them; and it is ſaid, that, when the mountain was parting, one of the inhabitants of the town gave the alarm, by declaring that he perceived the mountain ſeparating; however nobody minded him, and he could only prevail upon his daughter to leave the town with him: but the daughter returning back to lock the door of a room, in which ſhe had left ſome things of value, was deſtroyed with the reſt of the inhabitants, before ſhe had time to eſcape: it does not however appear what became of her father, who gave the alarm.

The city of Friedburg, in the landgraviate of Heſſe, has ſuffered ſo much from fires, that it is now reduced to one half the extent of ground which it formerly took up; the church, which before thoſe fires ſtood in the middle of the city, being now out of the town, and on the other ſide of the high road. One of thoſe terrible fires, which reduced this place, happened in the year 1383, and burnt 900 houſes; another broke out in the year 1447, and deſtroyed 700 houſes.

In the city of Franckfort, in the Wetteraw, a fire happened in 1719, which deſtroyed upwards of 500 houſes: but 4000 houſes were conſumed in 1184, by a fire which broke out in the city of Iſne in Swabia; and the city of Preſburg, in Hungary, has greatly ſuffered from fires, particularly in the years 1515, 1563, 1590, and 1642. But enough of ſuch diſmal relations.

SECT. IV.

An Account of the moſt celebrated Inventions, Diſcoveries, &c. of the Inhabitants of Germany, Bohemia, Hungary, *and* Switzerland.

AMONG the philoſophers of theſe countries, the moſt celebrated appears to be Godfrey William de Leibnitz, who was born at Leipſic in Saxony, in 1646, and whoſe father Frederic was profeſſor of moral philoſophy, and ſecretary to the univerſity of that place. He entered upon his academical ſtudies at fifteen years of age; and to that of polite learning joined philoſophy and the mathematics. He applied himſelf particularly to the ſtudy of the Greek philoſophers, and engaged in the taſk of reconciling Plato with Ariſtotle, as he afterwards attempted a like reconciliation between Ariſtotle and Des Cartes. Having, in the courſe of his mathematical ſtudies, obſerved the imperfection of Mr. Paſcal's arithmetical machine, which that learned perſon did not live to finiſh, he invented a new one at Paris, the uſe of which he explained to Mr. Colbert, who was extremely pleaſed with it; and the invention being approved likewiſe by the Academy of Sciences at Paris, he was offered a ſeat there as a penſionary member. The year following, 1673, he took a tour to England, where he became acquainted with Mr. Oldenburg, ſecretary, and Mr. John Collins, fellow of the Royal Society, from whom he received ſome hints of the invention of the method of fluxions, which had been diſcovered, in 1664, or 1665, by Sir Iſaac Newton, which hints Mr. Leibnitz ſo well underſtood and improved, that he claimed the honour of the diſcovery.

In the year 1700, the Elector of Brandenburg, afterwards King of Pruſſia, having founded an academy at Berlin, appointed Mr. Leibnitz perpetual preſident of it; and though his other affairs did not permit him to reſide conſtantly upon the ſpot, yet he made ample amends by the treaſures with which he enriched their memoirs, in ſeveral diſſertations upon geometry, polite literature, natural philoſophy, and phyſic. He afterwards ſet himſelf to invent a language ſo eaſy and perſpicuous, as to become the common language of all nations in the world: but though he laboured in this vaſt project, from the year 1703, yet his life did not prove ſufficient to complete it, having died in 1716. He was famous over all Europe, and wrote many pieces. Michael Gordiep Hanſchius collected, with great care, every thing that Mr. Leibnitz had wrote upon the principles of philoſophy, and formed a complete ſyſtem, under the title of *G. G. Leibnitzii Principia Philoſophiæ, more Geometrico, demonſtrata, &c.* publiſhed in 4to at Franckfort, in 1728.

John Kepler, who was born at Wiel, in the duchy of Wirtemberg, in 1571, was one of the greateſt aſtronomers that perhaps any age has produced. In 1626, he finiſhed and publiſhed the Rodolphine tables, begun by the famous Tycho Brahe. In 1629, he publiſhed the ſecond part of his Ephemeris, the firſt part having been publiſhed in 1617. He publiſhed many other pieces upon the ſubject of aſtronomy, in which he made ſuch noble and important diſcoveries, that he might have claimed the honour of having laid a ſolid foundation for phyſical aſtronomy. He has endeavoured to demonſtrate, that the planets do not move in circles, but in ellipſes, in one of whoſe focuſes is placed the ſun; and that their motions are regulated according to theſe two laws; firſt, that they deſcribe equal areas in equal times; and ſecondly, that the ſquares of their periodical times are as the cubes of the diſtances; both which are well known to be fundamental principles in the Newtonian aſtronomy. In the introduction to his commentaries, he diſcovers plainly enough, that he had a tolerable good notion of gravity: for he compares the ſun to a magnet, whoſe power diffuſed carries round the planets; and he alſo ſuppoſes the moon's attraction to be the cauſe of the tides. In the year 1618, he publiſhed his *Epitome Aſtronomiæ Copernicanæ*, in which he diſcovers ſome very ſingular notions. He died in the year 1630.

Amongſt the inventions of the Germans is that noble inſtrument the air-pump, to which the preſent age is indebted for ſo many curious diſcoveries, and which is aſcribed to Otho de Guerick, a conſul or burgomaſter of Magdeburg, who exhibited his firſt experiments therewith before the Emperor and the States of Germany at Ratiſbon, in the year 1654. It is true, ſome have aſcribed the invention to the honourable Mr. Boyle, and the engine has obtained the name of Machina Boyleana; but this is rather on account of the improvements made in it, or the various experiments it was applied to, by that great philoſopher; for though he had actually made ſome attempts of this nature before he knew any thing of what was done in Germany, yet he ingenuouſly confeſſes de Guerick to have been beforehand with him, and that it was the information he afterwards received from a book publiſhed by Schottus, containing an account of de Guerick's experiments, which enabled him to bring his deſign to maturity. This machine has been of late years much improved by the ingenious Mr. Hawkſbee and others, and ſeems now to be carried to its utmoſt perfection.

The uſe or effect of the air-pump is to exhauſt the air out of any proper veſſel, and thereby make what is generally called a vacuum, which in reality is only ſuch a degree of rarefaction as is ſufficient to ſuſpend the ordinary effects of the atmoſphere. Hence therefore we learn, in ſome meaſure, what our earth would be without the maſs of air which ſurrounds it, and how neceſſary it is to the life, generation, and nutrition both of animals and vegetables, and to other various purpoſes, in which we are apt to think it is not at all concerned.

The principle on which this machine is founded is the elaſticity or ſpring of the air; and the baſis or eſſential part of it is a metalline tube, anſwering to the barrel of a common pump or ſyringe, having a valve at the bottom opening upwards, and a moveable piſton or embolus, anſwering to the ſucker of a pump, furniſhed likewiſe with a valve opening upwards; the whole properly fitted to a veſſel as a receiver, from whence the air is to be exhauſted. The other parts of it, chiefly reſpecting conveniency, have been diverſified and improved from time to time; and particularly Mr. Hawkſbee, by adding a ſecond barrel and piſton to the former, to riſe as the other falls, and fall as it riſes, has made the working of the engine much eaſier than it was before. To this gentleman we are indebted for the ſtructure of the air-pump now in common uſe; but Mr. Martin has lately contrived one of a different form, which he calls a portable air-pump, being ſo conſtructed that it may, together with its receivers, be contained in a box of a ſmall ſize, and ſold at a low price in compariſon of thoſe before invented.

The reader muſt obſerve, as has been already hinted, that an abſolute vacuum cannot be obtained by the air-pump, i. e. all the air cannot be exhauſted out of the receiver, be the pump ever ſo good, or worked ever ſo long; for as the air which is drawn out is only expelled by the ſpring of that which remains behind, if we ſuppoſe every particle to be exhauſted, the laſt muſt be expelled without an agent, or there would be an effect without a cauſe, the abſurdity whereof is evident. However, the air is dilated by this machine to ſuch a degree, that bodies placed in an exhauſted receiver are uſually ſaid to be *in vacuo*; and by this means a vaſt number of curious experiments have been made, which have given great light into the ſecrets of nature.

The ſame Otho de Guerick, who invented the air-pump, contrived a new ſort of air-gun, which diſcharged ſhot by the rarefaction of the air, whereas the common air guns produce their effects by its compreſſion. Dr. Papin improved upon de Guerick's invention, and experiments were made before the Royal Society to try the force of his machine; which was very conſiderable, but not equal to thoſe whoſe ſtructure is founded on the compreſſion of the air. Of theſe the moſt common and portable kind conſiſts of two barrels, one of a ſmall bore, into which the bullet is rammed as in other guns, and another on the outſide of this, ſo large as to leave a ſpace between them, wherein the air is to be incloſed. nto this cavity the air is injected through a valve by a ſyringe fixed in the ſtock of the gun, and the diſcharge is made by drawing a trigger, which opens another valve, whereupon the compreſſed air ruſhes through a hole into the inner barrel, and expels the bullet with great violence. There is alſo a contrivance in the lock, that either the whole charge of air may be ſpent at one exploſion, or only part of it, and the reſt reſerved for freſh bullets; but the force is much the greater, if all the air be diſcharged upon one ſingle bullet.

The magazine air-gun is ſo contrived, that ten bullets lodged in a cavity near the place of diſcharge, may be drawn one by one into the ſhooting barrel, and ſucceſſively exploded in a very expeditious manner. Dr. Burnet takes notice of a gunſmith at Baſil, who ſhewed him one of theſe machines, and pretended the invention was his own, which muſt be acknowledged to be curious; but as the diſcharge of air-guns is attended with an inconſiderable report compared to that of fire-arms, nor is there any flaſh like that of gunpowder to diſcover from what hand the ſhot comes, it ſeems the intereſt of mankind, as the Doctor obſerves, to forbid the uſe of inſtruments ſo convenient for private aſſaſſinations.

The Germans have been famous for their improvement of the art of chemiſtry, which is that of ſeparating by means of fire the ſeveral ſubſtances of which mixed bodies conſiſt, and of compoſing new bodies by the mixture of different ſubſtances or ingredients.

The genius of the Germans has alſo appeared in the invention or improvement of ſeveral mechanical arts, and amongſt others they lay claim to the honour of having invented the curious and uſeful art of Printing. This art is ſaid to be of a very antient ſtanding in China, but then their manner of printing is quite different from that which is uſed in Europe; though it muſt be owned the European printing, in its infancy, was much the ſame with the Chineſe. However, as there was then no correſpondence between Europe and China, the paſſage into the Eaſt by the Cape of Good Hope being undiſcovered, there is no reaſon to charge the Europeans with having borrowed their art from the Chineſe, but each may be allowed to have fallen upon the ſame invention, though at very different times.

Printing, according to Father Le Comte, has been known in China from the earlieſt ages; but the great difference between their printing and ours is, that whereas we have but a ſmall number of letters in our alphabets, by the various arrangement whereof we can form infinite volumes, and by making our characters moveable, we are able to print the largeſt works with an inconſiderable quantity of letter, the ſame which ſerved for the firſt ſheets ſerving alſo for the ſucceeding ones, by being ſeparated and placed in a different order. The Chineſe, on the contrary, by reaſon of the prodigious number of their letters, find it more eaſy and leſs expenſive to cut them on wooden blocks, making as many blocks as there are pages in the book they intend to print, and theſe are of no farther uſe but for that ſingle work.

Who was the firſt inventor of printing in Europe, in what city and what year it was firſt ſet on foot, is a queſtion long diſputed among the learned, and not yet thoroughly decided. The cities of Mentz and Straſbourg, and that of Haerlem in Holland, are the warmeſt on this point of honour, but Mentz has always had the majority of voices.

From Mentz the art of printing ſpread itſelf in a ſhort time through great part of Europe, and is commonly ſaid to have been brought into England from Haerlem in 1468, by William Caxton, a merchant and citizen of London, who having been abroad in the Low-Countries for many years, not only got an inſight into the buſineſs, but prevailed with one of the workmen to come over and ſet up a preſs at Oxford, where an edition of Ruffinus on the Creed was printed the ſame year. In 1470, Caxton is thought by ſome to have brought the art to Weſtminſter; but a modern antiquary ſeems to have made it appear, that he did not bring it to England till about the year 1474, and that the firſt book known to have been printed in Engliſh, and by him, was the Hiſtory of Troy.

The matter of which the printing-letters conſiſt is a compound metal, made up of lead, tin, antimony, &c. mixed in a certain proportion, according to the diſcretion and experience of the founder. Each letter or character has its proper matrice, as they call it, which is a piece of copper, whereon the impreſſion of ſuch character has been ſtruck by means of a ſteel punchion, on one end of which it is graven in relievo. In order to caſt the letter, the matrice is placed at the end of an iron mould, incloſed within two thin pieces of board, and conſiſting of ſeveral parts, which have different names according to their different uſes. Every thing belonging to the mould being properly diſpoſed, and the metal melted over the furnace, the workman takes the mould in his left hand, and dips a little iron ladle with a wooden handle into the metal, which he pours into the jet or funnel of the mould, whereby it is conveyed to the matrice; at the ſame time moving his left hand briſkly forwards, that the metal may run the better. This done, he unbends the bow, which is a thick ſteel wire, ſerving by its ſpring to preſs and retain the matrice in its place, and having opened the mould, he takes out the letter by means of a little hook, ſhuts it again immediately, replaces the matrice, and caſts a new letter: and thus he proceeds with a ſurpriſing expedition till he has caſt the number required. The letters are now examined, and thoſe that are defective thrown aſide; the jets or tails are broken off, and the ſuperfluous metal, occaſioned by the mould's not being exactly cloſed, is cleared away with a knife. After this the two broad ſides of the letters are rubbed on a hard coarſe-grained ſtone, the perſon rubbing them having his two fingers next the thumb covered with a kind of finger-ſtalls made of leather, to prevent their being hurt by the friction; and in turning the letters he makes

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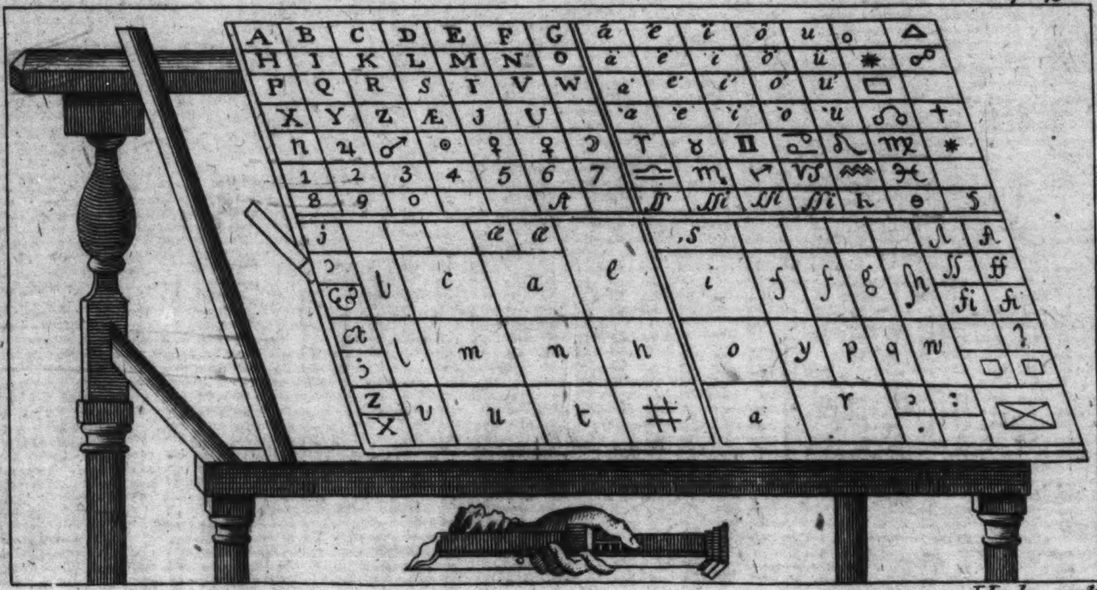
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J. Lodge sculp

The Printers letter Case and composingstick.

uſe of his thumb ſo nimbly, without diſcontinuing the motion, that a by-ſtander might be eaſily deceived, and think they had all the while been rubbed on one ſide only. The letters thus ground remain ſtill to be juſtified, that is, reduced to an exact height and thickneſs; for which purpoſe they are placed on a ſort of wooden ruler with a little ledge at the bottom, and the narrow ſides are ſcraped, which underwent no rubbing on the ſtone. To make them of an equal height, they are ranged upſide down in an inſtrument conſiſting of two long pieces joined together by ſcrews, which being fixed very faſt between two cheeks of wood, a plane is run along the bottom of the letters thus inverted, wherein a ſmall groove is formed, and being now compleatly dreſſed and adjuſted, they are fit for the printer's uſe.

After this ſhort view of the letter-founder's art, the reader may naturally expect ſome account of the method of printing. The letters then, being caſt and finiſhed as above deſcribed, are diſtributed, each kind by itſelf, into wooden caſes, as they are called, which are divided into a proper number of little cells or boxes of different ſizes. Theſe caſes are placed on a frame ſomewhat ſloping, in the manner of a reading-deſk, that the workman may reach the upper-boxes the better, and be in leſs danger of mixing the letters by ſtretching his arm over them. The compoſitor, having a leaf of the work to be printed lying before him, ſtands againſt the middle of the caſe, holding in one hand an iron inſtrument called a compoſing-ſtick, and with the other he takes the letters, figures, points, &c. out of the boxes as he needs them, ranges them in the compoſing-ſtick on a ſlip of braſs called a rule, and putting ſpaces between the words, he forms one line after another, till the ſtick is full. He then empties the lines into a wooden inſtrument called a galley, fills his ſtick again, empties as before, and ſo on till he has finiſhed a page, which he ties round with a ſmall packthread, ſets it by, compoſes another, and thus proceeds till the number of pages to be printed on one ſheet be compleated. This done, he carries them to a ſmooth hard ſtone, placed horizontally like a table, on which he ranges them in due order and diſtance, puts round them a ſet of furniture conſiſting of pieces of wood of different dimenſions, unties them, and at laſt faſtens or locks them up in an iron frame called a chaſe, ſo that the whole may be lifted up from the ſtone, as if it were one ſolid piece of metal. In this ſtate the pages, whether two, four, eight, twelve, or whatever number is to be printed on one ſide of the ſheet, are called a form; and the correſponding pages, to be printed on the other ſide, are fixed in another chaſe in the ſame manner, and at the ſame diſtance, ſo as to fall exactly on the back of each other. The two forms being thus impoſed, as they term it, one ſheet is printed, which is carefully read over, and the faults occaſioned by the compoſitor's inattention, or the caſual miſplacing of the letters in the boxes, are marked in the margin. In order to correct theſe miſ-

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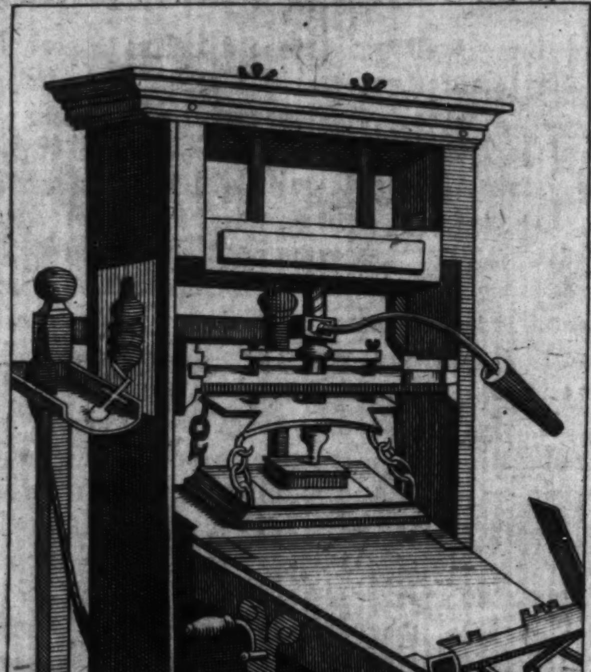

J. Lodge sculp

A Printing Preſs.

takes, the compoſitor lays the forms upon the ſtone, unlocks them, and with a ſharp bodkin picks out the wrong letters, puts others in their room, and makes all other neceſſary alterations. After this the ſheet generally undergoes a ſecond reading and correction, and is then committed to the preſs.

The printing-preſs is a very complex machine, of which it is not eaſy to form an idea by a bare deſcription. Its two principal parts, each whereof is compoſed of ſeveral others, are the body and the carriage. The body conſiſts of two ſtrong cheeks placed perpendicularly, joined together at top by a croſs piece of wood called the cap. A little below is another piece called the head, which is moveable, being ſuſtained by two iron pins, or long bolts, that paſs through the cap; and in the head is fixed a braſs nut, having a female ſcrew or worm, which receives the male ſcrew of the ſpindle. Through an eye or hole made in the ſpindle is rivetted an iron bar, by which the preſs is wrought; and the lower part, which is tapering and pointed with ſteel, is incloſed in a ſquare wooden frame called the hoſe, having two croſs planks, called ſhelves, to keep it ſteady. The point of the ſpindle works in a plug fixed in a braſs pan ſupplied with oil; and this pan is fixed to an iron plate let into the top of the platten, which is a ſquare ſmooth piece of wood, hanging horizontally, whereby the impreſſion is made. Underneath all, lies another piece called the winter, which bears the carriage, and ſuſtains the effort of the preſs below, as the head does above, each giving way a little, the one upwards, the other downwards, to make the pull the eaſier.

On the carriage are nailed two long iron bars or ribs, faced with ſteel; and to the plank, ſuſtained by the carriage, are nailed ſhort pieces called cramp-irons, equally tempered with the ribs, on which they ſlide when the preſs is turned in or out. Upon the plank is a ſquare frame or coffin, containing a hard poliſhed ſtone for the form to lie on; and underneath the carriage is fixed a ſmall piece of iron called the ſpit, with a double wheel in the middle, round which run leather girts, that are nailed to each end of the plank; and by the means of a handle or rounce at the hither end of the ſpit, the preſſman turns the plank in and out at pleaſure. Oppoſite to the body of the preſs are the tympans, being two ſkins of parchment paſted on wooden frames, one ſo ſmall as to lie within the other. The largeſt, or outward tympan, is faſtened to the coffin by iron joints, and between both are placed blankets, which ſoften the impreſſion of the platten on the ſurface of the letters, and render it more equable. To the top of this outward tympan is fixed, by joints, a thin frame of iron called a friſket, which is alſo covered with paper or parchment, ſo far as is neceſſary to keep the margin of the ſheet clean, and no farther.

In working at preſs two men are generally employed, one of whom applies the ink upon the form, by beating it over with two balls ſtuffed with wool, and nailed to a kind of wooden tunnels called ball-ſtocks; and the other lays the ſheet on the outer tympan, turns down the friſket and tympan on the form, which he runs in under the platten by means of the ſpit-handle abovementioned, gives two pulls with the bar to make the impreſſion, and then turning the ſame handle the contrary way, he brings back the form, lifts up the tympan and friſket, and takes off the printed ſheet. The form is then beat over again with the ink-balls, another ſheet laid upon the tympan, and printed in the ſame manner as before; and ſo the workmen proceed till they have wrought off the number of ſheets required. This form being then taken off the preſs, the correſponding one is laid on, and the ſheets printed on the other ſide, which renders them compleat. To get the ink off the forms, they are waſhed with a ſtrong lye; and then the compoſitor, as he finds occaſion, diſtributes the pages, that is, replaces the letters in their proper boxes, to be uſed again in the ſucceeding ſheets. All this is performed, both on the part of the compoſitor and the preſſman, with a degree of expedition and addreſs not eaſy to be imagined.

The invention of the rolling-preſs, for taking off prints from copper-plates engraven or etched, is commonly aſcribed to Lipſius; but it appears to be earlier than his time, as Mr. Ellis obſerves, from a printed miſſal in the Bodleian library, dated 1481, where there is a print of the arms of the See of Wurtzburg in Germany, and thoſe of the biſhop, evidently taken off by the rolling-preſs, as the impreſſion of the plate and other circumſtances leave no room to doubt. The diſcovery of the art of engraving is indeed ſaid to be as ancient as the year 1460, and aſcribed to Finiguerra, a goldſmith of Florence; however, nothing conſiderable was done in that way till ſome years afterwards by Martin of Antwerp, and then by Albert Durer and Lucas, who ſucceeded in it to admiration. About the ſame time the method of etching was diſcovered, that is, of eating the ſtrokes or lines in the copper with aqua fortis, inſtead of cutting them with a tool or graver.

As to the ſtructure of the rolling-preſs, it is much more ſimple than that of the printing-preſs above deſcribed; and we need only inform the reader, that the impreſſion is made by paſſing the plate, covered with the paper and blankets, between two wooden cylinders or rollers, whence the machine has its name.

As the origin of printing is generally referred to the Germans, an art calculated for the promotion of knowledge and the general good of mankind, ſo are they likewiſe ſuppoſed to be the authors of thoſe deſtructive and murdering inventions of guns and gunpowder. The diſcovery indeed, like many others, ſeems to have been caſual, and, according to Polydore Virgil, the name of the inventor is not known. Thevet ſays the perſon was a monk of Friburg, whoſe name was Anelzen; but other authors, with more probability, aſcribe it to Bartholdus Schwartz, a friar, who in making chemical experiments, mixed ſome ſalt-petre and brimſtone with other ingredients, and ſet them upon the fire in a crucible, into which a ſpark happening to get, the pot ſuddenly burſt with great noiſe and violence. This unexpected effect ſurpriſed him at firſt; but repeating the experiment, and finding it conſtant, he ſet himſelf to work to improve it: to which purpoſe he cauſed an iron tube to be made, with a ſmall hole at one end; and putting in ſome of his new compoſition, together with ſome little ſtones, he ſet fire to it, and found it anſwer his expectations, by penetrating all before it. This Schwartz, ſay they, taught the uſe of gun-powder to the Venetians, who firſt employed it in their war with the Genoeſe in 1380: but the invention is undoubtedly of an earlier date; for we read, that when Alphonſus, king of Caſtile, beſieged the Moors in 1343, they diſcharged a ſort of iron mortars which made a noiſe like thunder; and this is confirmed by what Don Pedro, biſhop of Leon, relates in his chronicle of king Alphonſus, who reduced Toledo, namely, that in a ſea-fight between the king of Tunis, and the Mooriſh king of Seville, about that time, the Tuniſians made uſe of iron tuns or barrels, from whence they threw thunderbolts of fire. Add to this what Du Cange tells us, that the regiſters of the chamber of accounts in France make mention of gunpowder as early as the year 1338. But after all, there is ſufficient reaſon to think that our celebrated friar Bacon underſtood the compoſition of gunpowder long before Schwartz was born, or any mention is made of its being uſed in war, as has been already obſerved in another part of this work.

Gunpowder is a compoſition of ſalt-petre, ſulphur, and charcoal, mixed together and formed into little grains, which eaſily take fire, and are rarefied or expanded with ſurpriſing vehemence. Writers vary with reſpect to the proportions of the three ingredients, but as to the proceſs there is little difference. All the ingredients are firſt finely powdered, then moiſtened with fair water, ſpirit of wine, vinegar, urine, or the like, and pounded together in a mortar for twenty-fours hours at leaſt; care being taken to wet the maſs from time to time, to prevent its taking fire. It is then formed into balls as big as eggs, which are put into a ſieve with a bottom of thick parchment made full of round holes; and by means of a wooden ball rolled about the ſieve along with them, they are broken in pieces, and forced through the little holes in grains or globules, which being dried, the powder is compleat. To make large quantities, mills have been invented, whereby more work is done in one day, than a man can do in a hundred.

The invention of this deſtructive powder was naturally followed by that of guns, cannons, mortars, and other inſtruments uſed in the modern art of war. The firſt cannons were called *tombardæ*, from *bombus*, by reaſon of their noiſe; and our word *bomb* had undoubtedly the ſame derivation. Theſe military engines ſeem to have had their origin before the middle of the fourteenth century; for beſides the teſtimonies already mentioned, hiſtorians inform us, that at the battle of Creſſy, in 1346, there were five or ſix pieces of cannon in the Engliſh army, with which, Mezeray ſays, the French were intimidated, being the firſt time they had ſeen ſuch thundering machines. As to the invention of bombs, neither the time nor the author is exactly known; for according to M. Blondel, the firſt bombs were thoſe thrown by Count Mansfeld into the town of Wachtendonk in Guelderland in 1588, though others ſay they were uſed almoſt a century before, viz. at the ſiege of Naples by Charles the Third, in 1495. They began to be uſed in France in 1634, and ſince that time they have been commonly employed in ſieges.

There is a very uſeful invention which ſome aſcribe to the Germans, viz. that of clocks, ſuch as are now in uſe amongſt us; at leaſt they may be allowed to have retrieved the art, and to have excelled all the world in the contrivance of variety of motions, not only to ſhew the courſe of the hours and minutes, but even of the ſun, moon, and ſtars; of which the clocks at Straſburgh, Prague, and many other places in Germany, are ſufficient inſtances. The emperor Charles the Fifth had a watch in the jewel of his ring; and in the elector of Saxony's ſtable may be ſeen a clock in the pommel of his ſaddle.

The neceſſity there is of meaſuring time has given riſe to many inventions for that purpoſe, whereof that of ſun-dials is of great antiquity; witneſs the dial of Ahaz, who began his reign 400 years before Alexander: but the art of dialling was not brought to its utmoſt perfection till the late diſcoveries in optics and aſtronomy. The uſe of the clepſydra is alſo very ancient, which was a contrivance to meaſure time by the fall of a certain quantity of water; as we ſtill do by the running of ſand out of one part of an hour-glaſs into the other. The invention of clocks with wheels, ſprings, &c. is of a more modern date, being referred to Pacificus, archdeacon of Verona, who lived in the ninth century; though others aſcribe it to Boethius, about the year 510. Be this as it will, we are certain that the invention of the pendulum-clock, whereby the meaſure of time is reduced to the greateſt exactneſs poſſible, is owing to the happy induſtry of the laſt age, the honour of it being diſputed between Huygens and Galileo.

The former, who publiſhed a treatiſe on the ſubject, declares that he firſt put it in practice in the year 1657; but Becher ſtickles for Galileo,

lileo, by whoſe direction he ſays the firſt pendulum-clock was made at Florence, and a pattern thereof brought into Holland. This however is certain, that the invention never flouriſhed till it came into the hands of Huygens, who inſiſts upon it, that if Galileo ever thought of ſuch a thing, he never brought it to any degree of perfection.

The firſt clock of this kind, made in England, was about the year 1662, by M. Fromantil, a Dutchman.

The invention of ſpring or pocket watches was likewiſe about the middle of the laſt century, and the honour of it lies between Dr. Hooke and M. Huygens, the Engliſh aſcribing it to the former, and foreigners to the latter. Dr. Derham is a ſtrenuous advocate for Dr. Hooke, and tells us that he contrived various ways of regulating watches, of which one was a loadſtone. Another was by a ſlender ſtrait ſpring, one end whereof played backwards and forwards with the balance, ſo that the balance was to the ſpring as the bob to a pendulum, and the ſpring as the rod thereof. A third method was by two balances, ſome of which were made with a ſpiral ſpring for a regulator, and others without. One of theſe watches with a double balance was made by Mr. Tompion, in 1675, and preſented to king Charles the Second; and the invention quickly getting into repute, both at home and abroad, two of them were ſent for by the dauphin of France. Soon after this M. Huygens's watch with a ſpiral ſpring appeared in England, and great matters were expected from it, as if it would ſerve to diſcover the longitude. This watch agreed with Dr. Hooke's in the application of the ſpring to the balance, but the pulſes of M. Huygens's were much ſlower, and the balance, inſtead of turning once round, as Dr. Hooke's, turned ſeveral times every vibration. Huygens invented ſeveral other kinds of watches, ſome without any ſtring or chain, to which in particular he gave the name of pendulum watches.

Repeating clocks and watches, *i. e.* ſuch as by pulling a ſtring, or other means, repeat the hour and quarters at any time of the day or night, are undeniably the invention of Mr. Barlow, who firſt put the contrivance in practice in larger movements, or clocks, about the year 1676; in which he was ſoon followed by other artiſts: but the application of it to pocket-watches was not known till the reign of king James the Second, when Mr. Barlow ſollicited a patent to ſecure his invention. The talk of this engaged Mr. Quare to put in execution a like contrivance, which he had thoughts of ſome years before; and as he endeavoured to prevent Mr. Barlow's obtaining a patent, a watch of each kind was ſhewn before the king and council, and upon trial the preference was given to Mr. Quare's.

SECT.

SECT. V.

Particular Deſcriptions of the moſt remarkable Public Building, and other ſingular Productions of Art, in Germany, Bohemia, Hungary, *and* Switizerland.

CHURCHES.

THE cathedral church of Vienna, dedicated to St. Stephen is a moſt ſtately fabric and generally admired, though ſome object againſt the darkneſs of the inſide, occaſioned by the painted glaſs of the windows. The ſteeple is certainly one of the ſtrongeſt and loftieſt in Germany, being four hundred and ſixty-five feet high; and under the croſs on the top there were formerly the Turkiſh arms, viz. a half-moon and ſtar, ſet up by the citizens when Solyman, the Magnificent, beſieged the city, becauſe he agreed to ſpare the ſteeple on that condition. This church contains many ſumptuous monuments of princes and other great perſons, the altars are richly adorned, and upon the whole, the beauty of the inſide is anſwerable to its majeſtic appearance without.

The cathedral of Saltzbourg is a magnificent edifice of free ſtone, having a very ſtately front, and is ſuppoſed one of the compleateſt in Germany. It is built in form of a croſs, with a lofty dome which ſeparates the nave from the choir. The inſide of the church is adorned with pilaſters of the Corinthian order, and the pavement conſiſts of great ſquares of marble of various colours. The high altar is of beautiful marble, whereon is placed, on grand feſtivals, a ſun of gold, ſet with precious ſtones of immenſe value; alſo a large croſs of ſolid gold, and four golden candleſticks. Here is an organ remarkable for its largeneſs, beſides four others of a leſſer ſize; and amongſt the principal ornaments of this church we may reckon four marble ſtatues bigger than the life, of St. Peter, St. Paul, St. Rupert, and St. Virgilius: St. Rupert, is ſaid to have been the firſt biſhop of Saltzbourg.

Thoſe who have a taſte for Gothic ſtructures will ſcarce find any in Germany more beautiſul than the cathedral church of Bamberg in Franconia, which is a vaſt edifice, having a lofty ſteeple, and four noble ſpires of bold workmanſhip, ſupported by tall pillars that appear very light and eaſy.

The emperor Henry the Second was the founder of this biſhopric, and his tomb with that of his conſort are to be ſeen in this cathedral, beſides very fair ones of ſeveral of its biſhops. In the treaſury of the church is ſtill preſerved the Imperial crown of the ſaid emperor, conſiſting of ſix plates of gold adorned with precious ſtones; and another of his empreſs, compoſed of two circles of gold, ſet alſo with pearls and jewels. Here is a ſtatue of the Virgin five feet high, all of ſolid ſilver, and another of St. George, on horſeback, combating the dragon, which is of ſilver gilt, and ſeven feet high. Amonſt many other rich curioſities here are likewiſe two fine vaſes of porphyry, a portable altar of maſſy gold, a little tabernacle and a large chalice of the ſame metal, a ſhrine of gold for relicks, and a fine crucifix of rock cryſtal, the Chriſt being of ſolid gold, and the whole adorned with rubies and emeralds. To theſe we may add a heavy croſs of gold, eighteen inches long, and another yet larger of ſilver gilt, both given by the above-mentioned emperor. Nor ought we to forget one of the greateſt rarities of this treaſury, which is a folio manuſcript of the four Goſpels in Latin, written upon fine vellum in a neat Roman character, with ſome Gothic letters interſperſed, and the moſt beautiful miniatures imaginable. The covers are of wood, curiouſly inlaid with figures in ivory, repreſenting our Saviour's paſſion, and on a gold border are the heads of the apoſtles, as are thoſe of the evangeliſts at the four corners.

Here is alſo a vaſt number of candleſticks, lamps, cenſers of gold and ſilver, and other utenſils belonging to this treaſury.

The cathedral of Ulm, in Swabia, now belonging to the Lutherans, is a lofty and well-proportioned ſtructure as any in the circle, and confeſſedly one of the fineſt in the empire. It is ſaid to have been above a hundred years in building, and that the very ſhell of it coſt 135,00 l. ſterling, excluſive of the windows, whereof there are ſix in the choir, that are moſt beautifully painted. This church has a large ſquare tower, and five ſtately ſpires, one of which is ſupported by ſix and thirty pillars. The tabernacle, which formerly contained the conſecrated hoſt, is a curious piece of workmanſhip, and ſaid to have coſt a hundred thouſand florins, being a ſingular kind of marble, and adorned with abundance of ſtatues. The choir is full of beautiful ſculptures, repreſenting pieces of ſcripture-hiſtory; and here is a noble organ, which was more than twenty, ſome ſay thirty years in compleating. It is thirty-nine feet high, and twenty-eight broad, has ſixteen pair of bellows, and above three thouſand pipes of Engliſh tin, of which the largeſt is thirteen inches in diameter.

The great church at Bern, in Switzerland, is a very magnificent ſtructure, and eſteemed a maſter-piece in the Gothic architecture. It has a fine lofty ſteeple, and is remarkable for having the largeſt bell in Switzerland, weighing upwards of ten tons. The great door is adorned with a repreſentation of the parable of the wiſe and fooliſh virgins, and the ſculptures in general, both within and without, are very well executed. There are alſo ſome admirable paintings in this church.

Belonging to a church at Erfurt is a bell, which is ſuppoſed the largeſt in Europe, weighing upwards of twelve tons, being eleven feet high, and thirty-three feet in circumference; and it is ſaid the ſound of this bell may be heard at the diſtance of twenty-four miles.

About three miles from Fribourg in Switzerland, is an hermitage dedicated to Mary Magdalene, and ſituated among woods and rocks in the prettieſt ſolitude imaginable. It is deſcribed by ſeveral travellers, particularly M. Blainville and Mr. Addiſon, who both ſaw it, about the beginning of the preſent century, when the hermit was ſtill alive. He had wrought out of a rock a neat chapel, with an altar, ſacriſty, and ſteeple; alſo five chambers, a parlour, refectory, kitchen, cellar, and other conveniencies. The funnel of his chimney, which pierces from his kitchen to the top of the rock, ſlanting all the way, is ninety feet high, and coſt him ſo much toil, that he was a whole year about it, and often deſpaired of finiſhing his deſign. All this muſt appear the more ſurprizing, when we conſider the dimenſions of the different parts of this hermitage, the chapel being ſixty-three feet in length, thirty-ſix in breadth, and twenty-two in height. The ſacriſty, or veſtry, is twenty-two feet ſquare, and the height of the ſteeple ſeventy feet. The chamber between the chapel and the refectory is above forty feet long, the re-

refectory itſelf is twenty-one, and the cellar is twenty-five feet long, and ten feet deep. But the hall or parlour is particularly admired, being twenty-eight paces in length, twelve in breadth, and twenty feet in height, with four openings for windows, much higher and wider than thoſe of our beſt houſes. At one end of this hall was the hermit's cabinet, with a ſmall collection of books and other curioſities. To add to the pleaſantneſs and convenience of this habitation, he had cut the ſide of the rock into a flat, and having covered it with good mould, had formed a pretty garden, planted with divers ſorts of fruit-trees, herbs, and flowers; and by following the veins of water that dropped from ſeveral parts of the rock, he had made himſelf two or three fountains, which ſupplied his table, and watered his little garden. This hermit, whoſe name was Jean du Pré, began this laborious undertaking at the age of thirty, and ſaid he was twenty-five years in compleating it, having had no ſort of aſſiſtance from any perſon whatſoever except one ſervant. He intended to have carried on his work ſtill farther, but was drowned in 1708, as he was croſſing a neighbouring river in a boat with ſome company that came to viſit him on St. Anthony's day, the patron of his chapel. His place is ſupplied by a prieſt, who ſubſiſts by the generoſity of ſtrangers that come to ſee the hermitage, whom he generally entertains with bread and wine and a noſegay.

REMARKABLE PALACES, *and other* BUILDINGS.

ONE of the moſt magnificent palaces of Germany is the Elector of Bavaria's palace at Munich; which is a ſuperb ſtructure, fit for the reception of the greateſt monarch in Europe. According to the Marquis of Palavicino, who has given a deſcription of it, this palace contains eleven courts, ſix chapels, twenty halls, 2,600 large windows, nineteen galleries, ſixteen great kitchens, twelve large cellars, and forty apartments, all on one floor, in which are three hundred rooms, richly furniſhed, and filled with paintings, ſtatues, relievo's, and other ornaments. One objection however is made to this fine building, viz. that its chief front, which looks towards a narrow ſtreet, has the reſemblance of a convent, to which the image of the Virgin Mary over the great gate greatly contributes; and it is alſo obſerved, that having been built at ſeveral times, the architecture is ſomewhat irregular. The beauty of the inſide, however, is confeſſed on all hands; but that called the Emperor's apartment is particularly admired. The great hall of this apartment is a hundred and eighteen feet long, and fifty-two broad, and is adorned with curious pictures of ſacred hiſtory on one ſide, and profane on the other. The chimney-piece is alſo embelliſhed with fine figures amongſt which is a ſtatue of prophyry repreſenting virtue with a ſpear in her right-had, and a palm-branch in her left. It is ſaid that Guſtavus Adolphus, King of Sweden, was ſo delighted with this hall, that he wiſhed it was tranſported to Stockholm.

The late elector added a new apartment to this palace, which, though not ſo large as the emperor's, ſurpaſſed it in elegance and ſplendor. It was adorned with excellent paintings, and numbers of antique buſts and vaſes, placed upon tables of great value; but in the year 1730 this new apartment was burnt down by a fire which broke out in the night-time, ſo that ſcarce any of the fine furniture was ſaved, and the elector and his conſort narrowly eſcaped the flames. In the little chapel belonging to the apartment of the electreſs hardly any thing was to be ſeen but gold, pearls, and jewels. The furniture of the palace in general was rich beyond imagination; and in the treaſury were whole ſervices of gold plate and other coſtly veſſels, with an incredible number of diamonds, rubies, and other precious ſtones. Add to theſe the many fine paintings, ſtatues, buſts, &c. with which the galleries, halls, ſtair-caſes and chambers were adorned; beſides a very valuable library, and a vaſt collection of coins, medals, and other rarities both antient and modern.

The electoral palace of Nymphenbourg, where the court frequently reſides, is charmingly ſituated in the middle of a large plain, and affords from the windows of the ſecond ſtory a proſpect of innumerable rural beauties. The grand avenue leading to this palace conſiſts of a double row of elms on each ſide of a noble canal, which at each end has a ſpacious baſon adorned with water-works. By a flight of marble ſteps we aſcend into a very large and lofty ſalon, from whence on each hand there is a paſſage into ſeveral apartments richly furniſhed: and having croſſed this ſpacious hall, we deſcend by marble-ſteps into the gardens. Here the firſt thing that ſtrikes the eye is a parterre of a vaſt extent, at the entrance of which there is a great baſon, with a group of gilt figures in it, repreſenting Flora receiving flowers from nymphs, and cupids. This parterre is terminated by a moſt delightful wood, through which are cut three walks, whereof the middlemoſt fronts the grand pavilion of the palace, and has a large canal running the whole length of it, and ending with a fine caſcade. The walk on the right hand leads to a ſemi-circular mall, at the entrance of which is a pretty pavilion called Pagodebourg, being built in the form of a Pagod or Indian temple; and the furniture of this little palace is entirely Indian, all ſurprizingly neat and elegant. In the walk on the left hand is a larger building called Badenbourg, or the bathing-houſe, the baths whereof are ſpacious, lined with marble, and adorned with ſtatues and vaſes; and there is alſo an apartment richly furniſhed, and embelliſhed with gildings, paintings, and other ornaments. This fabric is ſurrounded with fine pieces of water, caſcades, and ſtatues; and, in a word, both art and nature ſeem to have ſtrove to render theſe gardens magnificent and delightful.

At Darmſtadt, in the landgraviate of Heſſe, is a palace belonging to the Landgrave, which, had it been finiſhed according to the original model, would have been one of the largeſt and moſt magnificent in Europe; the part which is finiſhed has a very grand appearance, and the apartments are ſtately and richly furniſhed.

The Elector Palatine's palace, at Manheim, is a large, ſtately, and ſubſtantial building, conſiſting of two great courts ſeparated by an open gallery, or terrace, on which is laviſhed a profuſion of ornaments. This palace fronts a large and beautiful ſquare, conſiſting of lodgings for the officers of the court: the apartments of the palace are very magnificent, and have perhaps the fineſt proſpect in the world.

At Prague is a magnificent royal palace, belonging to the Queen of Hungary, with a ſummer-houſe affording a delightful proſpect.

The biſhop of Bamberg has two palaces in that city, the old, and the new; of which the latter is a vaſt pile of free-ſtone, three ſtories high, with a very regular front between two noble wings, containing grand and commodious apartments, well furniſhed, and adorned with excellent paintings. The building is modern, having been erected by a late biſhop, who alſo built Pommersfelden, a country palace or hunting-ſeat about eight miles from Bamberg, reckoned one of the moſt beautiful and complete ſtructures in the empire. It is likewiſe of free ſtone, built in the form of a ſquare, with four large towers, one at each corner; and entirely round the court within there is a noble piazza. Here is a magnificent ſtair-caſe, and one of the beſt contrived in Europe, which is beautifully painted, as well as the ceilings of the principal apartments. The ſalon, which ſerves as a paſſage to the garden, is alſo finely painted, and adorned with marble ſtatues; and all the furniture and ornaments of the palace, as well as the apartments themſelves, are diſpoſed with the utmoſt elegance and judgment.

His Pruſſian Majeſty's palace at Berlin, the capital of the electorate of Brandenburg, is a ſtately fabric of free-ſtone, conſiſting of four ſtories. It was begun by Frederick the Firſt, in 1699, and having been the work of ſeveral architects, the fronts are not exactly regular. The apartments are large, the ceilings lofty and beautifully painted, and the furniture truly royal, there being particularly ſuch a quantity of ſilver, as is ſcarce to be parallelled in any other palace in Europe. Moſt of the tables, ſtands, looking-glaſs frames, chandeliers, ſcreens, &c. are of that metal; and there is a buffet, which takes up one entire ſide of a room, filled with ciſterns, large baſons, and other veſſels of ſilver gilt. There is a fine gallery in this palace, adorned with admirable paintings, done by the

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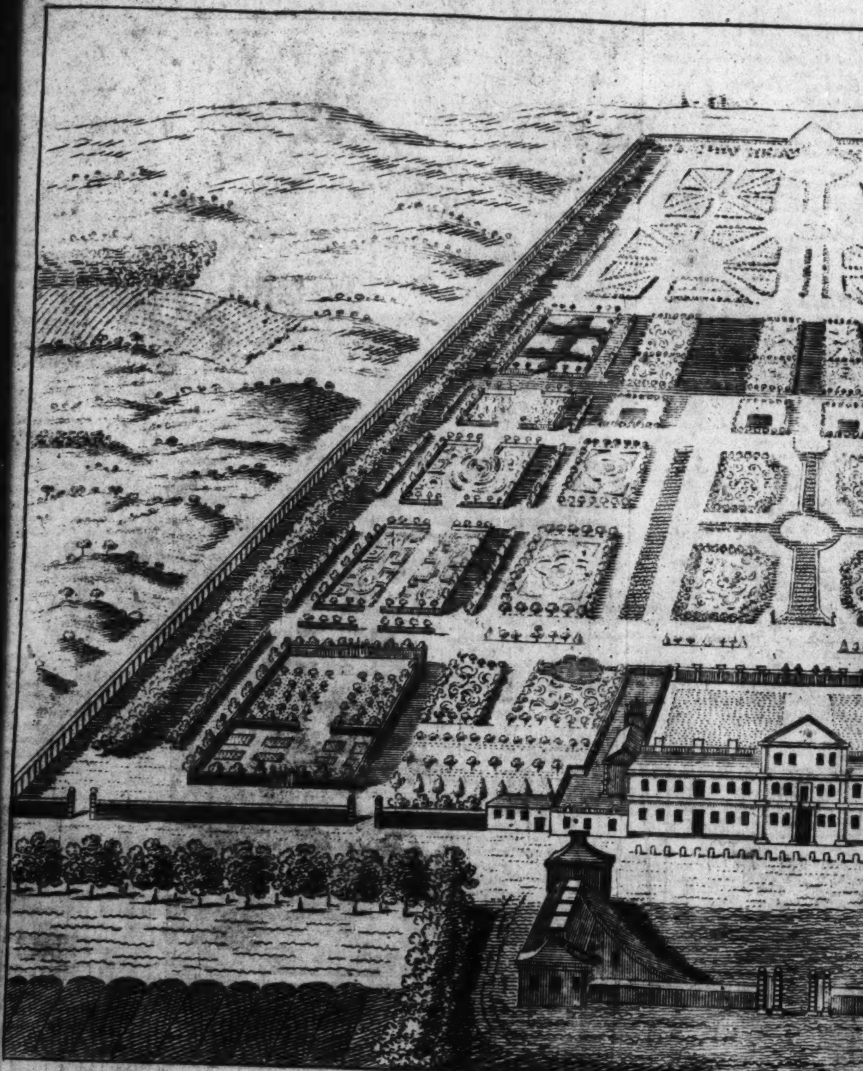
beſt maſters; and on the ceiling are repreſented the principal actions of the late elector. On the ſide next the garden is a noble library, and near to it is a cabinet of curioſities, with a choice collection of medals.

His Britannic Majeſty's palace at Herenhauſen near Hanover, is chiefly famous for its beautiful gardens, which in ſome reſpects are thought equal to any in France, and ſuperior to moſt in the empire. The walks are laid out in the moſt elegant manner, the wilderneſs of ever-greens is charming, and here is one of the largeſt and nobleſt orangeries in Europe; alſo a perfect theatre cut in green ſeats, with arbours and ſummer-houſes for the actors to dreſs in, or retire to as occaſion requires. They are adorned throughout with ſtatues, vaſes, and whatever elſe is neceſſary to render them noble and delightful; but above all, they are admired for their beautiful fountains, caſcades, and other water-works.

The magnificent town-houſe at Augſbourg, is a ſtructure which merits obſervation as much as any thing of the kind in Germany. It is a large ſquare building, entirely of free-ſtone, except the portico, which is of reddiſh marble, crowned with a balcony of the ſame, ſupported by ſtately columns of white marble. At the top of the front, juſt below the pediment, there is a large ſpread-eagle in braſs, which holds in its talons a globe and ſceptre, the whole ſaid to be two and twenty hundred weight, and to have



A View of yᵉ Palace & Gardens, belonging to his Britannick

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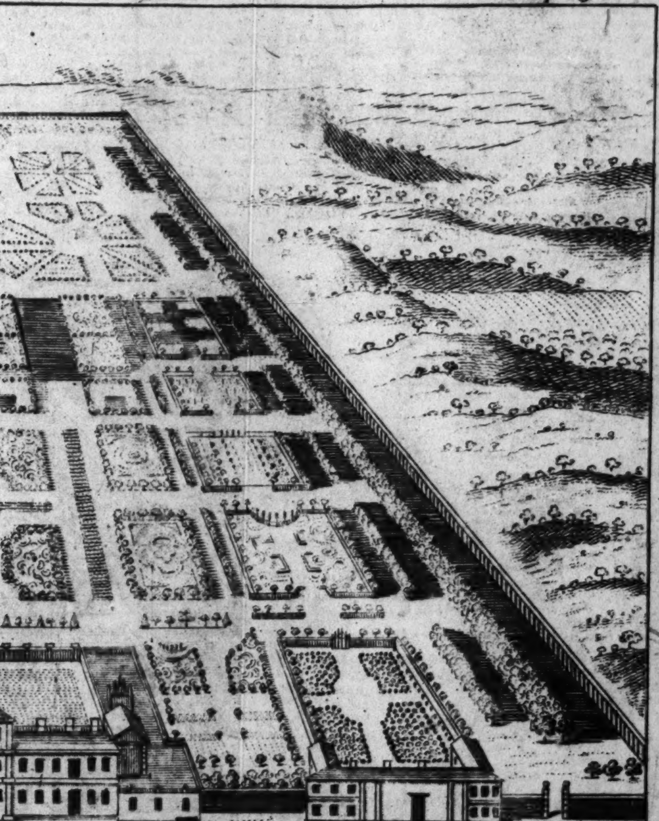

Hulett sculp

k Majesty at Herrenhausen, near Hanover.

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have coſt above 1800 l. ſterling; and over the gate are the city-arms, ſupported by two brazen griffins, all of excellent workmanſhip. The great hall, which is one hundred and ten feet long and fifty-eight broad, is paved with marble, and enlightened by fifty-two windows, and adorned with fine paintings and ſtatues in niches. The ceiling is divided into a vaſt number of compartments, the ſquares and pannels whereof are embelliſhed with fine gilded ſculptures and other ornaments. From this hall we aſcend into another of equal beauty and magnificence, the workmanſhip of the ceiling being admirable, and every part of it adorned with a profuſion of fine ſculpture, gilding, and painting. In the four adjoining chambers, each forty feet ſquare and nineteen in height, which are covered with excellent pictures, the magiſtrates give audience to the envoys of the emperor, the electors, and other ſovereign princes. There are likewiſe ſeveral chambers for the council, the court of juſtice, &c. all of them filled with fine paintings, and over the doors are the buſts of pagan and chriſtian Emperors.

The town-houſe of Zurich in Switzerland. rebuilt in 1694, is a fine regular ſtructure of free-ſtone, three ſtories high, with a frontiſpiece fifty paces in breadth, ſupported by pillars of black marble ſtreaked with white, and reſting upon baſes and chapiters of braſs. On the top of each of the two pillars, cloſe to the entrance, is the figure of a lion of gilt braſs, holding an eſcutcheon, with the arms of the city; and this building is ſinely adorned with ſculptures both in wood and ſtone, together with exquiſite paintings.

At Ratiſbon in Bavaria, is a fine ſtone bridge over the Danube, conſiſting of fifteen lofty arches of free ſtone, each twenty-three feet wide, ſupported by ſquare pillars, and defended by buttreſſes. This bridge is 1091 feet in length, and twenty-three feet in breadth, with three beautiful towers, through each of which is a handſome gateway.

At Bex, in the canton of Bern in Switzerland, is a ſtone bridge over the Rhone dedicated to St. Maurice. It is near five hunred feet long, and conſiſts only of one arch, of a conſiderable height, with a handſome tower on the top. And in the canton of Uri, there is a ſtone bridge over the Ruſs, of a ſurpriſing height, conſiſting only of one arch, reſting upon two very high rocks. It is called Devil's bridge, from a notion of the inhabitants in the neighbourhood, that it muſt have been erected by the devil.

SECT. VI.

Curious Remains of Antiquity in Germany, Bohemia, Hungary, *and* Switzerland; *remarkable Laws, Cuſtoms, and Traditions of the Inhabitants; with a ſummary View of the moſt extraordinary Revolutions amongſt them.*

REMAINS of ANTIQUITY, REMARKABLE LAWS, CUSTOMS, and TRADITIONS.

THE town of Naſſau, in the Wetterau in Germany, was, in the time of the Romans, a conſiderable city, as appears from ſeveral remains of Roman highways in the neighbourhood ſtill viſible, with cirques, aqueducts, triumphal arches, and other monuments of Roman grandeur.

About five miles from Nyon, in the canton of Bern, in Switzerland, are ſtill viſible the ruins of a wall, built by Julius Cæſar, to prevent the Swiſs from penetrating into Gaul. It reached eighteen miles, from mount Jura to the lake, according to Cæſar's own account, in the firſt book of his *Comentaries*; and at Yverdun, in the ſame canton, have been found medals of all the Roman emperors, from Auguſtus to Julian the Apoſtate, with many other monuments of antiquity.

At Avenches, in the canton of Bern, have been found Roman coins, and many other remains of Roman antiquity, particularly the ruins of a magnificent amphitheatre, together with thoſe of towers, walls, and other buildings.

In Baden, in the canton of the ſame name, is a ſtone pillar, with a Roman inſcription, in memory of a ſtone cauſeway, built by the emperor Trajan, through this country, of about eighty miles in length, ſome remains of which are ſtill viſible ; and at Zurzach, in the ſame canton are the ruins of an ancient forteſs, ſuppoſed to have been one of the forty which Druſus erected along the banks of the Rhine : here have been found ſeveral Roman coins and medals ; and at Wettengen, not far from this place, an earthen pot was dug up, in 1633, full of ſilver medals of the Roman emperors, together with ſome ſilver veſſels, which are conjectured, from an inſcription on a ſtone of the ſteeple of the abbey church here, to have been uſed in a temple which formerly ſtood in this place dedicated to the goddeſs Iſis.

In a chapel belonging to the church of Mortigny, in Valais, are three antique columns, and a Moſaic pavement, together with ſeveral Roman inſcriptions ; at Geneva is an ancient tower, which bears the name of Julius Cæſar, by whom it is ſuppoſed to have been built; and in the lake at this place, is a great ſtone, called Neyton, or Nitton, which in the time of the Romans ſerved as an altar, on which ſacrifices were offered to Neptune, and other dieties of the waters; and not many years ago, knives and other inſtruments of ſacrifice were found here all of braſs.

In a church, in the city of Prague is a charter, which is ſaid to be the original charter of Alexander the Great; this, if genuine, muſt be the moſt antient record in Europe, of which the following is a tranſlation:

'We Alexander the Great, ſon of king 'Philip, founder, of the Grecian empire, go'vernor of the Perſians, Medes, &c. and of 'the whole world from eaſt to weſt, and from 'north to ſouth, ſon of Great Jupiter, by &c. 'ſo called, to you the noble ſtock of Slavo'nians, and your lineage, becauſe you have 'been unto us a help, true in faith, and va'liant in war. We confirm all that tract of 'earth, from the north to the ſouth of Italy, 'from us and our ſucceſſors, to you and your 'poſterity for ever: and if any other nation be 'found there, let them be your ſlaves. Dated 'at Alexandria, the 12th of the goddeſs Mi'nerva. Witneſs Ethra, and the eleven princes 'whom we appoint our ſucceſſors.'

Of the famous Golden Bull, edict, or imperial conſtitution, made by the emperor

Charles the Fourth, there are three originals, one of which is preſerved at Prague, one at Nuremberg, and the third in an apartment in the town-houſe of Franckfort, which is never ſhewn to ſtrangers, but in preſence of two of the council and the ſecretary. It is a little Latin manuſcript in quarto, conſiſting of forty-two leaves of parchment. This is reputed to be the Magna Charta, or the fundamental law of the German empire. It is called Golden, becauſe it has a golden ſeal, in the form of a pope's bull, tied with yellow and red cords of ſilk; upon one ſide is the emperor repreſented ſitting on his throne, and on the other the capitol of Rome. It is alſo called Caroline, on Charles the Fourth's account. Till the publication of the Golden Bull, the form and ceremony of the election of an emperor were dubious and undetermined, and the number of the electors not fixed. This ſolemn edict regulated the functions, rights, privileges, and preeminences of the electors. This ordinance, containing thirty articles, or chapters, was approved of by all the princes of the empire, and remains ſtill in force.

In a long narrow chapel of the cathedral church at Franckfort, called the Conclave, the emperor is choſen; and in another chapel of the ſame church, he is crowned. After the election is over, the emperor and electors meet in the town-houſe of Franckfort, where is a great hall, in which the Imperial feaſt is kept on the coronation day. Before the houſe is a great ſquare, where, at this ſolemnity, an ox is roaſted, ſtuffed with veniſon, wild fowl, and ſucking pigs; and thither one of the electors comes in perſon for a ſlice of beef, which he carries to the emperor's table, after which the ox is abandoned to the populace. Another of the electors carries his Imperial majeſty a glaſs of wine, which, on that occaſion, runs from a fountain in the middle of the ſquare. A third elector carries his majeſty a meaſure of oats; and in this ſquare, after the coronation, another elector diſtributes the medals ſtruck upon the occaſion.

The city of Nuremberg, in Franconia, has the cuſtody of moſt of the Imperial ornaments made uſe of at the emperor's corronation, as 1. Charlemagne's crown, which weighs fourteen pounds, and about which there is a mitre, enriched with a vaſt number of diamonds, rubies, emeralds, and pearls; and on the front a croſs of diamonds of great value. 2. Charlemagne's Dalmatic robe, or mantle, embroidered with large pearls. 3. The golden apple, or globe. 4. Charlemagne's ſword. 5. His golden ſceptre. 6. The Imperial cloak, embroidered with eagles, and bordered with large emeralds, diamonds, ſapphires, and chryſolites. 7. The buſkins covered with plates of gold. 8. The gloves embroidered with curious ſtones. Theſe Imperial ornaments are preſerved in the church of the hoſpital of this city, in which church is alſo a large cheſt, ſuſpended from the ceiling by Iron chains, and containing a vaſt many ſacred relics, ſhewn only to travellers of very great diſtinction.

In the cathedral church of Cologne are ſhewn the tombs of the three wiſe men who came to worſhip our Saviour, called from hence the Three Kings of Cologne, whoſe bones, it is pretended, were removed to Conſtantinople by Helena, the mother of Conſtantine; thence they were carried to Milan, by Euſtrophius, biſhop of that ſee, and afterwards brought hither by Rainold, biſhop of Cologne. The remains of the Three Kings of Cologne are depoſited in a large purple ſhrine, ſpotted with gold, ſet upon a pedeſtal of braſs, in the middle of a ſquare mauſoleum, faced both within and without with marble and jaſper. This ſhrine is opened every morning at nine o'clock, when theſe kings are ſhewn lying at full length, their heads adorned each with a crown of gold, garniſhed with jewels. Their names which are Gaſpar, Melchior, and Balthaſar, are in purple characters upon a little grate, which is adorned with a vaſt number of large rich pearls, and other jewels, particularly an oriental topaz as big as a pigeon's egg, valued at 30,000 crowns. Over againſt this ſhrine are ſix large branches of ſilver, with wax candles, which burn day and night.

One of the two pariſh churches of this city is dedicated to St. Urſula, who, it is ſaid, was martyred here with eleven thouſand virgins, in the reign of the Roman emperor Maximinianus;

anus: and the tomb of St. Urſula, together with the bones of the pretended virgin martyrs, are ſhewn here to this day. Some of the ſkulls of thoſe virgins, moſt noted for miracles, are kept in caſes of ſilver in this church; others are covered with ſtuffs of gold; and ſome have caps of cloth of gold and velvet.

In the town-houſe of Cologne, which is a large Gothic ſtructure, is depoſited a vaſt variety of antique arms, conſiſting of bows, arrows, bucklers, and the like, among which is a croſs bow of whalebone, twelve feet long, eight inches broad, and four inches thick.

A favourite recreation of the Germans in winter is riding in ſledges, of which there are various ſorts, ſome open, and moved by ſprings; others, like the Roman triumphal chariots, drawn by a horſe, or ſome wild beaſt, trained up to that ſervice, and adorned with ribands, feathers, and bells. The princes of Germany with their courts, frequently uſe this paſtime, and run races with theſe machines on the ice and ſnow. But the moſt favourite recreation of the Germans is hunting, at which they are acknowledged to be the moſt expert in the world, particularly at boar hunting and bull hunting; and the princes of this country after vaſt preparations of new liveries, rich field equipages, and ſylvan muſic, ſet out a hunting, with as numerous a retinue as if they were going to encounter a formidale enemy.

There is a diverſion, which is the common amuſement of the court of Vienna, and is deſcribed as follows by an Engliſh lady who was in a public character at this court, in the year 1717. The empreſs Amelia, being at her palace of retirement, about half a mile from Vienna, was ſeated on a little throne, at the end of a fine alley in her garden, and on each ſide of her were ranged two parties of her ladies of quality, headed by two young archducheſſes, all dreſſed in their hair full of jewels, with fine light guns in their hands; and at proper diſtances were placed three oval pictures, which were the marks to be ſhot at. The firſt was that of Cupid filling a bumper of Burgundy, with the motto, '’Tis eaſy to be 'valiant here.' The ſecond, a Fortune, holding a garland in her hand: the motto, 'For 'her whom fortune favours.' The third was a ſword with a laurel wreath on the point: the motto, 'Here is no ſhame to the van'quiſhed.' Near the empreſs was a gilded trophy wreathed with flowers, and made of little crooks, on which were hung rich Turkiſh handkerchiefs, tippets, ribands, laces, &c. for the ſmall prizes. The empreſs gave the firſt with her own hand, which was a fine ruby ring, ſet round with diamonds in a gold ſnuff-box. There was for the ſecond a little Cupid, ſet with brilliants; and beſides theſe a ſet of fine China, for the tea-table, enchaſed in gold, Japan trunks, fans, and many gallantries of the ſame nature. All the men of quality at Vienna were ſpectators; but the ladies only ly had permiſſion to ſhoot; and the archducheſs Amelia carried off the firſt prize.

The popiſh inhabitants of the biſhopric of Paderborn, in Weſtphalia, at a certain ſeaſon of the year, aſſemble each with a lighted taper, and go out with their prieſts at their heads, to the woods and groves, to viſit images, and ſacred relics, frequently placed there in little chapels, which are ſeldom or ever opened but upon theſe occaſions. The proceſſion is compoſed of a mixed multitude of both ſexes, and of all ages, who are generally out two or three days, and often lie promiſcuouſly in woods or barns.

The paſtoral life is ſo deſpiſed among the inhabitants of the circle of Swabia, that the meaneſt peaſant will not aſſociate with a ſhepherd. On the contrary, the profeſſion of hangman, in this circle, particularly in the duchy of Wirtemberg, inſtead of being infamous, is held in ſuch eſteem, that the common executioner is reckoned a fit companion for any gentleman; and is reſpected in proportion to the number of executions he has performed; and when theſe amount to a certain number, he is complimented with the degree of doctor of phyſic.

At St. Goar, in the county of Heſſe, is an iron collar, faſtened by a chain to a wall, the deſign of which is to impoſe upon travellers, who, the firſt time they paſs through this town, have the collar put round their neck, and are aſked whether they chuſe to be baptized with wine or water? If they agree to be baptized with wine, they are ſuffered to paſs, by giving the executioners of this law ſomething to drink; if not, they are well drenched with water, which is thrown over them. After this ceremony, they preſent the ſtranger with wine in a ſilver goblet, which they ſay was given them by Chriſtiana, queen of Sweden, as a ranſom from their baptiſm. It is ſaid that the emperor Charles the Fifth gave the collar to the inhabitants with this whimſical privilege.

On one of the pediments of the cathedral church of Lubeck, is an inſcription in nine Latin diſtiches, intimating that the emperor Charlemagne, having taken a ſtag alive in theſe parts, cauſed a collar of gold, with a croſs on it, to be put about his neck, inſcribed thus: *Hoc Cæſar me donabat*, with the date of the year; and then turned him looſe again into the foreſt; and that Leon, duke of Saxony, having caught the ſame ſtag, four hundred years afterwards, with the collar about his neck, built and endowed a cathedral on the ſpot, and granted the biſhops a croſs; or, in a field gules, for their arms; and as a monument of this fact, the figure of a ſtag is placed on the top of the church.

REVOLUTIONS and other MEMORABLE EVENTS.

THE earlieſt account we have of the inhabitants of Germany is from Julius Cæſar, who relates, that the Germans, having croſſed the Rhine, under the command of Arioviſtus, one of their kings, attacked the Gauls, then under the protection of the Romans; upon which Cæſar marched againſt them, drove them back over the Rhine, built a bridge acroſs that river, and obtained ſeveral conſiderable victories over them.

Druſus, the adopted ſon of Auguſtus, ſubdued great part of Germany, which he reduced into a Roman province, and from that conqueſt obtained the title of Germanicus: but Quintilius Varus, having ſucceeded Druſus, loſt all that his predeceſſor had conquered; upon which the Rhine and the Danube became the boundaries of the Roman empire on that ſide, and to defend it againſt the incurſions of the Germans, Auguſtus placed forts and garriſons upon the banks of thoſe rivers.

But notwithſtanding theſe precautions, the Franks, Burgundians, Almans, and other German nations, broke through the Roman barriers, paſſed the Rhine, and diſpoſſeſſed the Romans of all Gaul, Rhœtia, and Noricum, which they ſhared amongſt them: but the

Franks, prevailing over the reſt, at length eſtabliſhed their empire over all Germany, France, and Italy, under the conduct of Charlemagne, who in the year 800, was crowned emperor of the weſt, as has been already related in the revolutions of France.

From this period, the revolutions in Germany have alſo been exhibited among thoſe of France, till the death of the emperor Lewis IV. about the year 912, when the French line of Charlemagne ended in Germany, and the imperial dignity became elective, as it continues to this day.

From the death of Lewis, when the imperial dignity became elective, the dignities or great offices, which before had been only by commiſſions, were rendered hereditary, becauſe the empire had ceaſed to be ſuch; and the electors were fixed at ſeven. Conrad, duke of Franconia, was the firſt who was elected emperor, after that dignity had been refuſed by Otho, duke of Saxony, on account of his great age. His authority was not however acknowledged in Italy, where the popes were grown powerful, and the government had been uſurped for above ſixty years before by petty tyrants. The emperor Conrad dying in the year 920, Henry, ſurnamed the Fowler, the ſon of that Otho who refuſed the imperial dignity, was elected emperor. The imperial dignity continued in the line of Henry the Fowler, till the death of his great grandſon, Otho III. in the year 1002, when Henry, duke of Bavaria, was choſen emperor. This prince was ſucceſsful in his wars againſt the Saracens, whom he drove out of Apulia and Calabria in Italy, and he vanquiſhed the Wendiſh forces, who had over-run great part of Germany.

In 1024, upon the death of Henry of Bavaria, Conrad, a prince deſcended from Charlemagne, ſucceeded to the empire, and was ſucceeded by his ſon Henry, whoſe ſon Henry, an infant of ſix years of age, was choſen emperor, in 1056, by the name of Henry IV. but pope Gregory VII. refuſing to acknowledge him for his ſovereign, ſet up Rodolph, duke of Swabia, againſt him; and though Rodolph was defeated, and killed in battle, the pope ſo managed matters, that he procured Henry to be depoſed by his ſubjects, who elected his ſon in his ſtead, after he had reigned fifty years, and fought ſixty-two general battles; and before he died, this unhappy prince was reduced to ſuch great difficulties, that he begged a prebendary in the church of Spire, which he himſelf had founded, but was refuſed it by the biſhop.

Henry V. the ſon of Henry IV. was obliged to acknowledge the pope's ſupremacy, and renounce all pretenſions to the inveſtiture of biſhoprics, which his predeceſſors claimed, even to that of the pontificate itſelf: this prince dying without iſſue, in 1125, was ſucceeded by Lotharius, duke of Saxony, who received his crown from the pope, and upon whoſe death, in 1138, his ſiſter's ſon, Conrad, duke of Swabia, mounted the imperial throne. He was ſucceeded by his ſon Frederick, who, from his red beard, was ſurnamed Barbaroſſa. This emperor was crowned by pope Adrian, but during the papacy of pope Alexander III. he was excommunicated for oppoſing ſome encroachments of that ſee; and was ſo humbled, that he ſubmitted to throw himſelf at the pope's feet, and ſuffer him to tread on his neck. In the year 1187, the emperor Frederick, Richard I. king of England, and Philip II. king of France, went all three on an expedition to the Holy Land, where the emperor was drowned in a river, as he was bathing. He was buried at Tyre, and was ſucceeded by his ſon Henry, who alſo died upon an expedition to the Holy Land, which the pope had prevailed upon him to undertake.

Philip, the brother of Henry VI. ſucceeded to the imperial throne, in 1190; but was excommunicated for refuſing to acknowledge the pope's ſupremacy, and Otho, duke of Brunſwick, was ſet up againſt him by the pope and the greateſt part of the electors. By theſe competitors the whole empire was engaged in a bloody war, which continued till Philip was treacherouſly aſſaſſinated in the year 1208, when he left Otho in peaceable poſſeſſion of the empire: but Otho had not reigned four years, before he was depoſed by the pope and the electors, and Frederick, king of Sicily, advanced to the imperial dignity by the name of Frederick II.

Frederick II. who is greatly celebrated by hiſtorians for his learning, wiſdom, and reſolution, was five times excommunicated by the popes, but prevailed ſo far againſt pope Gregory IX. as to depoſe him from the papal chair: theſe continual conteſts between the pope and the emperor gave riſe to thoſe two famous factions of Guelphs and Gibbellines, the former adhering to the pope, and the latter to the emperors. Upon the death of Frederick, who reigned thirty-eight years, there ſtarted up no leſs than ſix competitors for the imperial dignity, which occaſioned an interregnum of great confuſion, for upwards of twenty years. The competitors were Conrad, the ſecond ſon of Frederick, who was elected king of the Romans, but was poiſoned by his phyſicians three years after he had aſſumed the title of emperor; Henry, Landgrave of Heſſe, who was killed at the ſiege of Ulm; Manfred; William, earl of Holland, declared king of the Romans by the pope, in oppoſition to the emperor Frederick II. but was afterwards aſſaſſinated; Alphonſus, king of Caſtile; and Richard, earl of Cornwall, brother to Henry III. of England. At length, in the year 1273, Rodolph, earl of Hapſburg, was choſen emperor, and confirmed by the pope. This prince firſt raiſed the Auſtrian family, by creating his ſon Albert archduke of Auſtria, who was afterwars elected emperor.

Upon the death of the emperor Rodolph, in 1292, Adolph, earl of Naſſau, ſucceeded to the imperial throne: but ſerving with his troops as mercenaries in the army of Edward of England againſt France, he ſo diſguſted the electors, that they made choice of Albert, archduke of Auſtria, ſon of the emperor Rodolph, for their ſovereign, who defeated Adolph, in a pitched battle, and killed him with his own hand, in the year 1298. Albert made his ſon Rodolph king of Bohemia, and attempted to reduce Hungary, but was aſſaſſinated in 1308, when Henry, earl of Luxemburg, was elected emperor. This prince was celebrated for his wiſdom, valour, and piety ; but was, after a reign of ten years, poiſoned by a Franciſcan monk, with the conſecrated elements ; upon which, Ludowick, duke of Bavaria, after an interregnum of ſome years, was raiſed to the imperial throne : Frederick, duke of Auſtria, ſon of the late emperor Albert, was ſet up by an oppoſite faction, but defeated by Ludowick, who conſtantly oppoſed the papal encroachments, depoſed pope John XXII. and raiſed Nicholas V. to the pontificate.

Upon the death of Ludowick, in 1346, Charles, the ſon of John, King of Bohemia, was elected emperor, by the name of Charles IV. and was ſucceed by his ſon Wenceſlaus in 1378, who being a diſſolute cruel prince, was depoſed, after a reign of twenty-two years, and ſucceeded by Frederick, duke of Brunſwick, who was aſſaſſinated by Henry, Count of Waldeck, as he returned from the place of election, in the year 1400.

Upon the aſſaſſination of Frederick duke of Brunſwick, Rupert, elector palatine of the Rhine was choſen emperor; and after a reign of ten years, was ſucceeded by Jodock, marquis of Moravia, nephew to the emperor Charles IV. this prince reigned but nine months, and was ſucceeded by Sigiſmund king of Hungary and Bohemia, and brother to the emperor Wenceſlaus. Sigiſmund, dying in 1440, was ſucceeded by his ſon-in-law, Frederick, duke of Auſtria, who reigned 53 years, and whoſe poſterity had the addreſs to continue the empire in their family for 300 years, till the year 1740, when they loſt it, for want of iſſue male. Maximilian having been elected king of the Romans, in 1486, ſucceeded his father Frederick the Third, in 1493, and married Mary, the daughter and heireſs of Charles duke of Burgundy, by which match all the territories belonging to that duke, were transferred to the houſe of Auſtria.

Charles V. afterwards ſurnamed the Great, ſon to Philip king of Spain, and grandſon to Maximilian, was elected emperor in 1519. He procured Luther's doctrines to be condemned, but did not meddle with his perſon; and it was in this reign, that the diſciples of Luther obtained the name of proteſtants, from their *proteſting* againſt a decree of the imperial diet in favour of the catholics. A ſhort view of the hiſtory of Charles the Fifth has been delivered already among the monarchs of Spain.

In 1558, Ferdinand I. ſucceeded his brother Charles V. in the empire: and, in 1564, was ſucceeded by his ſon Maximilian II. at that time king of Bohemia, and afterwards king of Hungary. In 1576, Rodolph ſucceeded his father Maximilian in the empire ; and, in 1612, was ſucceeded by his brother Matthias, who made war upon the proteſtants in Bohemia, but dying without iſſue, in 1619, Ferdinand of Gratz, archduke of Auſtria, and grandſon to Ferdinand I. was elected emperor. Upon the acceſſion of this prince to the imperial throne, the ſtates of Bohemia apprehending that he would be as ſevere upon the proteſtants as his predeceſſor had been, offered the crown of Bohemia to Frederick V. Count Palatine of the Rhine, which ſo incenſed the emperor, that he determined upon the deſtruction of the proteſtants. This kindled a bloody war in Germany, which laſted near thirty years, and was terminated by the treaty of Weſtphalia, in the ſucceeding reign, by which the proteſtants were ſecured in their religious and civil rights.

In 1637, Ferdinand III. ſucceeded his father Ferdinand II. having been elected king of the Romans the preceding year. He carried on the war which his father had commenced, obtained a complete victory over the proteſtants at Ratiſbon, and broke the power of the Swedes, who had been long victorious in Germany : but being afterwards deſerted by moſt of the princes of the empire, he was obliged to ſign the treaty of Weſtphalia. In the year 1653, he procured his eldeſt ſon Ferdinand to be elected and crowned king of the Romans, but this young prince died the year following.

In 1658, Leopold, the only ſurviving ſon of Ferdinand III. ſucceeded his father in the empire, and entered into a confederacy with Denmark, Brandenburg, and Poland, againſt Charles Guſtavus, king of Sweden, who was become very formidable to the German princes; having, in a great meaſure, conquered Poland, and made a conſiderable progreſs in the north of Germany; and the war was carried on with different ſucceſſes, till the peace of Oliva, in 1660. In the year 1663, the emperor entering into a war with the Grand Signior, loſt the greateſt part of Hungary; the Hungarian proteſtants uniting their forces with the Turks, who in 1683 laid ſiege to Vienna, the capital of the empire, and were on the point of taking it, when John Sobieſki, king of Poland, came to its relief; and joining the duke of Lorrain, the imperial general, they attacked the beſiegers in their trenches, and entirely defeated them. From this time the Turks loſing ground every campaign, were at length, in 1688, driven entirely out of Hungary. But the French in the mean time, invaded the empire on the ſide of the Rhine, and burnt and plundered the Palatinate in a very terrible manner; upon which the emperor and the empire, Great Britain, the Dutch, and the northern powers, entered into a confederacy againſt France the year following. The war, however, continuing between the Imperialiſts and the Turks, and the Hungarian malecontents making a diverſion in favour of the infidels, the emperor could ſpare no great number of troops to join the confederates in Flanders, notwithſtanding which, a peace was concluded at Ryſwick, between the allies and France, in 1697, by which all places were reſtored that had been taken on either ſide. And now the chriſtian powers being at peace among themſelves, the Turks thought fit to agree to a truce at Carlowitz, in 1699.

About this time, Great Britain, France and Holland, entered into a treaty for the partition of the Spaniſh dominions, between the archduke Charles, and the dauphin of France, in caſe of the death of Charles II. king of Spain; they entered into this treaty without the conſent of the Auſtrian family, who looked upon themſelves as the undoubted heirs of the whole Spaniſh monarchy: and the emperor being deſired to accede to the ſaid treaty, after it was concluded, rejected the propoſal with ſome indignation. Soon after ſigning the partition treaty, died Charles II. king of Spain, who by his will, left his dominions to Philip, duke of Anjou grandſon of Lewis XIV. of France, upon which the French king immediately ſeized upon all the Spaniſh dominions, and proclaimed the duke of Anjou king of Spain. At the ſame time the emperor invaded Italy, and entered into a confederacy with Great Britain, the United Provinces, and other powers, for the recovery of the Spaniſh territories, which the emperor claimed, on account of his having married one of the Infanta's of Spain, and his being deſcended from another of them: but the principal events of this war have been related already in the revolutions of Spain.

Upon the 5th of May, in the year 1705, died the emperor Leopold, in the ſixty-fifth year of his age, leaving, by his third and laſt empreſs, Magdalena Thereſa, daughter to prince Philip William of Newburg, two ſons, Joſeph and Charles, who both ſucceeded to the imperial throne, and three archducheſſes, Mary Elizabeth, Mary Anne, and Mary Magdalen. Joſeph, king of the Romans, ſucceeded his father Leopold, who laid his dying commands on him to aſſiſt his brother Charles in the recovery of the Spaniſh monarcy.

Upon the 20th of April, 1711, died the emperor Joſeph, upon which the allies uſed their utmoſt efforts to have his only brother Charles III. king of Spain, elected in his room; for which purpoſe, prince Eugene detached fifty ſquadrons of horſe, and twelve battalions of foot, from the grand army in Flanders, to reinforce the Imperialiſts on the Rhine, and fruſtrate the deſigns of the French, who were endeavouring to penetrate into Germany again, in order to influence the electors, and prevent the advancement of king Charles to the imperial throne, notwithſtanding which he was choſen emperor on the 12th of October, by the name of Charles VI.

On the 11th of April, 1713, the treaties between the plenipotentiaries of France, Great Britain, Savoy, Portugal, and the States General, were ſigned at Utrecht, by which Philip, duke of Anjou, was acknowledged king of

Spain, but the emperor refuſed the terms of accommodation, and continued the war: however, on the 6th of March, 1714, a treaty of peace was ſigned at Raſtadt, between the emperor, France, and Spain, by which the Spaniſh territories in Italy and the Netherlands were confirmed to the emperor, and Spain and Spaniſh America were allotted to king Philip.

The Turks having declared war againſt the republic of Venice, in 1714, the year following, made themſelves entire maſters of the Morea; and this rapid progreſs of the Ottoman arms obliged the emperor to enter into a confederacy with the Venetians for their mutual defence. Hoſtilities having begun between the German and Ottoman empires, in the beginning of the year 1716, prince Eugene, on the 5th of Auguſt, attacked the Turkiſh army, conſiſting of near 200,000 men, near Carlowitz, in Hungary, and entirely routed them; the Imperialiſts made themſelves maſters of all their cannon, tents, baggage and ammunition, the military cheſt, and the grand vizir's pavilion. After this victory, prince Eugene inveſted Temeſwaer, and ſoon reduced it, after having been in poſſeſſion of the Turks 164 years.

Upon the 18th of June, 1717, the Imperialiſts inveſted the city of Belgrade; and the Turks coming to the relief of it, on the 16th of Auguſt, prince Eugene engaged them, and obtained a complete victory, ſoon after which the place ſurrendered. About the ſame time, a war breaking out between the emperor and his allies on the one part, and Spain on the other, a treaty of peace was concluded between them in 1720, by which treaty, Sicily was aſſigned to the emperor, and Sardinia to the duke of Savoy.

In the year 1722, the emperor having no iſſue male, ſettled his hereditary dominions on his eldeſt daughter, the archducheſs Maria Thereſa, which ſettlement was confirmed by the diet of the empire, obtained the name of the pragmatic ſanction, and was guaranteed by Great Britain, France, the States General, and moſt of the other powers in Europe. The emperor having, about this time, erected an Eaſt India company at Oſtend, a miſunderſtanding aroſe between him and the maritime powers, which was at length amicably adjuſted. In the mean time treaties were ſet on foot at Cambray, and other places, for ſettling all differences between the emperor and Spain; but theſe negotiations coming to nothing, the emperor and the king of Spain entered into a treaty themſelves, which was concluded at Vienna, 1725.

In 1733, a war breaking out between France, Spain, and Sardinia, on the one part, and the emperor on the other, the emperor was driven out of all his Italian dominions, except Mantua; but on a treaty of peace which followed two years after, the emperor's dominions in the north of Italy were reſtored to him, on his ceding Naples and Sicily to Don Carlos, who thereupon relinquiſhed his claim to Tuſcany and

Parma, and was recognized king of the Two Sicilies.

In the year 1738, the Turks invaded the emperor's dominions in Servia, and recovered the whole province : they afterwards laid ſiege to Belgrade, which important fortreſs was ceded to them by a treaty which ſoon followed, and by which the Danube and the Save were ſettled as the boundaries of the Auſtrian and Turkiſh territories in Hungary.

Upon the 28th of October, 1740, died the emperor Charles VI. upon which his daughter the archducheſs Maria Thereſa, conſort to the duke of Lorrain, was recognized queen of Hungary and Bohemia, and heireſs of all the late emperor's hereditary dominions. And notwithſtanding her right had been acknowledged and guaranteed by moſt of the powers in Europe, and the king of Pruſſia among the reſt, this prince immediately invaded Sileſia, without ſo much as a declaration of war ; having only publiſhed a manifeſto, declaring that he had no bad deſign againſt the court of Vienna, that he only intended to vindicate the pretenſions of his family to that duchy, founded upon antient conventions, between his anceſtors the electors of Brandenburg, and the princes of Sileſia : on the the contrary that he was ready with all his forces, to guarantee and defend the dominions of the houſe of Auſtria, againſt all invaders ; and that he would uſe his intereſt to procure the imperial dignity for the duke of Lorrain. In the mean time the Pruſſians continued advancing into Sileſia, ſeizing one ſtrong town after another, and encountering the Auſtrians at Molwitz, upon the 10th of April, 1741, entirely defeated them.

About the ſame time, Charles, elector of Bavaria, who had married one of the archducheſſes, a daughter of the emperor Joſeph, ſet up a claim to the hereditary dominions of the late emperor; and, being aſſiſted by the French, invaded the queen of Hungary's dominions, compelled the electors to promiſe their votes to ſet him on the imperial throne, and was accordingly elected emperor at Franckfort, on the 13th of January, 1743, by the name of Charles VII. On the other hand, the Auſtrians invaded Bavaria, and reduced it; and, the queen of Hungary having ceded Sileſia to the king of Pruſſia, together with the county of Glatz, in Bohemia, on condition his Pruſſian majeſty would ſtand neuter, drove the French, who had poſſeſſed themſelves of Bohemia, out of that kingdom.

Soon after the death of the emperor Charles VI. Philip king of Spain publiſhed a memorial alſo, claiming the ſucceſſion of the emperor's hereditary dominions, the deſign of which claim was, to ſecure Lombardy for the infant Don Philip. Accordingly he formed an army in Italy, conſiſting of 60,000 men, under the command of the duke of Montemar, but the king of Sardinia declaring for the queen of Hungary, and joining the Auſtrian army, and the Neapolitans being forced to agree to a neutrality, the Spaniards ſound themſelves every year under a neceſſity of encountering new difficulties.

In the year 1742, Great Britain declared for the queen of Hungary: the year following the Dutch marched a body of forces to her aſſiſtance; and on the 15th of June, was fought the battle of Dettingen, in which the French were defeated, and obliged to paſs the Maine, with great precipitation; after which the Netherland's became the theatre of the war, of which all ſides being at laſt tired, a peace was concluded at Aix-la-Chappelle, in October, 1748. In the month of January, 1745, died the emperor Charles VII. and was ſucceeded in his electorate by his eldeſt ſon Maximilian Joſeph, the preſent elector of Bavaria, who was ſoon afterwards obliged to obandon his capital to the Auſtrians; and, being in danger of loſing all his dominions, concluded a peace with the queen of Hungary, at Fueſſen; and on the 15th of September, 1745, Francis Stephen, grand duke of Tuſcany, and conſort of the queen of Hungary, was elected emperor.

In 1756, the king of Pruſſia, having been informed that a plan had been concerted by Auſtria, Ruſſia, and Saxony, for diſpoſſeſſing him of great part of his dominions, particularly Sileſia, he immediately put his army in motion, took poſſeſſion of Saxony, and on the 1ſt of October, engaged marſhal Brown, the Auſtrian general, at Lowoſcutz, and entirely defeated him. On the 6th of May, 1757, the king defeated prince Charles of Lorrain and marſhal Brown, near Prague, when 20,000 Auſtrians were killed, wounded, and taken priſoners. His majeſty afterwards attacked marſhal Daun in his entrenchments, near Colin, but not being able to force them, he was obliged to quit Bohemia.

On the 5th of November, 1757, the king of Pruſſia attacked the combined army of France and the empire, at Roſbach, and gained a complete victory, having killed 5000 French and Imperialiſts, and taken 12,000 priſoners with all their baggage, and 140 pieces of cannon. On the 5th of December, the ſame year, the king came up with prince Charles of Lorrain, and the marſhals Daun and Nadaſty, at Liſſa, when a bloody battle enſued, in which the Auſtrians were entirely defeated. In this battle, the Auſtrians had 12,000 men killed and wounded, and 20,000 taken priſoners: they loſt beſides 168 pieces of cannon, 43 colours and ſtandards, and 3000 baggage and ammunition waggons.

About the ſame time, the campaign opened on the ſide of Hanover, though it was then the depth of winter, and the weather remarkably ſevere. The French having the preceding ſummer repulſed the allied army, under the command of the duke of Cumberland, took poſſeſſion of Hanover on the 9th of Auguſt. On the 7th of September, a neutrality was ſigned, by which the allied army was confined to the country about

bout Stade; but in the beginning of December following, the Hanoverians, having been joined by a body of Pruſſians, marched from Stade, under the conduct of prince Ferdinand of Brunſwick, and, in the courſe of about three months, drove the French not only out of the electorate of Hanover, but out of all Germany; the French having loſt near 60,000 men in that country, by ſickneſs, and the ſeverity of the ſeaſon.

The principal events in Germany during the remaining part of this war were thoſe following: upon the 23d of June, 1758, the allied army, under the command of prince Ferdinand of Brunſwick, near Crevelt, attacked the French army, under the command of the count Clermont, and entirely defeated them. On the 25th of Auguſt following, the king of Pruſſia attacked the Ruſſian army, on the frontiers of Poland, and gained a complete victory over them, killing 15,000 Ruſſians on the field of battle, taking their military cheſt, and all their artillery. On the 14th of October, the Auſtrians, under the command of marſhal Daun, ſurpriſed the Pruſſians in their camp, and defeated them.

On the 1ſt of Auguſt, 1759, the allied army, under prince Ferdinand, obtained a complete victory over the French near Minden, upon the Weſer; and the king of Pruſſia having attacked the Ruſſians in their camp near Franckfort upon the Oder, on the 12th of Auguſt following, after a moſt obſtinate engagement, and a very great ſlaughter on both ſides, the Pruſſians were obliged to retreat.

Bohemia is ſaid to be a name derived from the *Bemi*, or *Boiemi*; the antient inhabitants of this country, who, according to Tacitus, were deſcended from the Boii, a nation of Gaul, who retired into the Hercynian foreſt, which runs through this country, rather than ſubmit to the Roman yoke.

Bohemia was originally divided into ſeveral principalities, each governed by its reſpective prince or duke, till Zechus, the brother of Lechus, who founded the monarchy of Poland, about the ſixth century, obtained a kind of ſovereignty over the whole, but was ſtill ſtiled duke, or great duke, and was acknowledged the chief, or captain-general, of the country, which continued under the government of a great duke, until Uladiſlaus II. who ſucceeded his brother duke Spitigneus II. in the year 1061, was created king of Bohemia, in 1086. This kingdom appears to have been elective, though the emperors of Germany frequently impoſed a king upon the Bohemians; and, at laſt ſeized upon the crown themſelves.

Sigiſmund, king of Hungary, and afterwards emperor of Germany, was upon the throne of Bohemia, when John Huſs, and Jerom of Prague, endeavoured a reformation in the church, and were burnt at the ſtake for it, in 1418, by order of the council of Conſtance, though the emperor had promiſed them his protection. This occaſioned an inſurrection in Bohemia ; the inhabitants of Prague threw the emperor's officers out at the windows of the council-chamber, for publiſhing a proclamation, forbidding the Huſſites to aſſemble for divine ſervice ; and Ziſca, a Bohemian nobleman, and the leader of the Huſſites, aſſembling an army of 40,000 Bohemians, defeated the emperor's forces in ſeveral engagements, and drove the Imperialiſts out of the kingdom, which the emperor was not able to recover from the Huſſites, till they were ruined by their own diviſions ; after which they underwent a very ſevere perſecution, and the emperor re-eſtabliſhed his dominion over Bohemia.

In the year 1609, during the reign of the emperor Rodolph, the Proteſtants of Germany formed a confederacy, called the Union, or Evangelical League, of which they choſe Frederick IV. elector palatine, for their head : with theſe the proteſtants of Bohemia joined, under pretence of being oppreſſed by the emperor, and called in his brother Matthias to their aſſiſtance, obliging the emperor Rodolph to reſign the crown of Bohemia to Matthias, who was proclaimed and crowned king of Bohemia, in 1611, and elected emperor upon the death of Rodolph the year following.

In 1616, the emperor Matthias declared his couſin Ferdinand, king of Bohemia, and cauſed him to be crowned and recognized by the ſtates of that kingdom, with the reſtricton, that he ſhould not execute any regal act in the emperor's life-time, without his conſent. The emperor Matthias, at this time kept his court at Vienna, and king Ferdinand at Gratz, in Stiria; the adminiſtration of the government of Bohemia being therefore left to the privy council of that kingdom, who were generally Roman catholics, the Bohemian proteſtants were much diſcountenanced and oppreſſed; upon which the nobility of that perſuaſion aſſembled at Prague, in order to procure a redreſs of their grievances; at the ſame time levying forces to ſupport their pretenſions. The government, being apprehenſive of an inſurrection, deputed ſome of the imperial miniſters to the proteſtant nobility, to endeavour to pacify them: but the proteſtants being heated in the aſſembly, inſulted the emperor's miniſters, by throwing ſome of them out at the caſtle window; they proceeded afterwards to expel the Jeſuits out of the city of Prague, by their own authority; at which the emperor being further exaſperated, both ſides took the field, towns were taken, and ſeveral ſkirmiſhes happened between the Imperial and Proteſtant troops.

In the mean time, the emperor Matthias dying, king Ferdinand ſucceeded to the imperial throne when the barons of Bohemia, notwithſtanding they had acknowledged Ferdinand for their king, in the reign of the late emperor, ſent privately to offer the crown of that kingdom to Frederick V. elector palatine, who was the head of the Proteſtant league, and had married the princeſs Elizabeth, daughter of James I. of Great Britain. This prince being crowned king of Bohemia, in November, 1619, the Imperial generals invaded and plundered the Palatinate, while the duke of Bavaria, with another army, followed the elector into Bohemia, aud in a pitched battle, near the walls of Prague, entirely defeated him. Upon which being deprived of his electorate, and expelled all his dominions, he fled to Holland, and was forced to depend upon the court of London for his ſubſiſtence; his family not being reſtored to the electorate before the treaty of Weſtphalia, in 1648; and the princes Rupert and Maurice his ſons, ſerved in king Charles I's. army, during the civil wars in Great Britain. The emperors of Germany have had the dominion of Bohemia ever ſince, until the king of Pruſſia invaded and reduced the duchy of Sileſia, in 1741, which has been confirmed to him by ſeveral treaties.

Hungary, a part of the antient Pannonia, was thus called from the *Huns*, a Scythian nation, who ſettled in this country in the third century. Hungary was at firſt divided into ſeveral little independent principalities, which united at length, for their mutual defence, under one head, who had the title of duke.

The Hungarian writers relate, that their country was governed by fourteen of theſe dukes ſucceſſiely, before the nation embraced chriſtianity; the laſt duke was Geyſa, who being converted to the chriſtian faith, about the year 1000, was baptized by St. Adelbert, at Prague; and being old and infirm, reſigned his government, with the conſent of his people, to his ſon Stephen, who took the title of king; and the emperor Charles VI. father of the preſent queen of Hungary, was the forty-ſeventh king of this country.

Hungary was an elective kingdom many years, but generally in one family. Charles Robert, who aſcended the throne in 1310, ſubdued Bulgaria, Servia, Croatia, Dalmatia, Sclavonia, and ſeveral other provinces which he annexed to his dominions, ſome of which, however, the Venetians recovered from him. In the time of Ladiſlaus, an infant king, who began his reign in 1444, the Turks invaded Hungary; but were bravely repulſed by the famous John Hunniades, who was regent of the kingdom, during the minority of Ladiſlaus, and on the death of that prince, in 1458, the Hungarains, in gratitude to the father's ſervices, elected Matthias Corvinus, the ſon of Hunniades, for their king.

Upon the death of Matthias Corvinus, Uladiſlaus, king of Bohemia, was advanced to the crown of Hungary, in 1460, after whoſe death, in 1516, Lodowick, his ſon, ſucceeded him, both in the kingdoms of Hungary and Bohemia. He was a brave warlike prince, but venturing to engage Solyman, emperor of the Turks, with an inferior army, he was defeated and killed in the battle, in 1526, and great part of Hungary loſt. To him ſucceeded John, waywode of

Tranſylvania, who was driven from the throne by Ferdinand, brother to the emperor Charles V. who had married Anne, the ſiſter of king Lodowick: however, Solyman, the Turkiſh emperor, reſtored him to the throne again; but his rival being ſupported by the emperor Charles, was crowned king of Hungary in 1527, and was afterwards elected emperor of Germany: from this time began a war between the German and Turkiſh emperors, for the dominion of Hungary, which laſted near two hundred years; and from the ſame time the houſe of Auſtria have been able to influence the elections in ſuch a manner as to keep the crown in their family ever ſince, and this kingdom is now become an abſolute hereditary monarchy; the emperor Charles VI. having procured it to be ſettled on his female iſſue, in default of males; and his eldeſt daughter, the empreſs queen, enjoys the crown at this day.

Switzerland was known to the Romans by the name of *Helvetia*, and was reduced under the Roman power by Julius Cæſar, who annexed this country to that part of his government called Gallia Celtica. The Helvetians remained ſubject to the Romans, till the deſtruction of that empire, by the northern nations, when new kingdoms and ſtates being erected out of its ruins, Switzerland was comprehended in the kingdom of Burgundy, about the beginning of the fifth century.

The kingdom of Burgundy not laſting above an hundred years; Switzerland upon the fall of it, was annexed to the crown of France, to whoſe kings it remained ſubject to the beginning of the ninth century, when a new kingdom of Burgundy being erected, Switzerland continued a part of it, till the year 1032, when Rodolph III. and laſt king of Burgundy, dying without iſſue, transferred his kingdom to the emperor Conrad II. called the Salick, whoſe ſucceſſors enjoyed it near two hundred years, when this kingdom being neglected by the emperors, ſeveral petty ſovereignties were formed out of it, which, upon being oppreſſed, threw off their allegiance in 1308, and declared themſelves independent ſtates; and though the houſe of Auſtria made ſeveral attempts to reduce the cantons of Switzerland, they defended themſelves ſo well, that, at the treaty of Weſtphalia, in 1648, they were acknowledged free and independent.

Since the treaty of Munſter, the Switzers have not engaged much in foreign wars, but ſeveral warm diſputes have happened among themſelves, on account of religion; and particularly in the year 1712, when a war broke out between the two proteſtant cantons of Zurich and Bern, and the five catholic cantons of Lucern, Uri, Switz, Zug, and Underwald, in which the two proteſtant cantons defeated the five catholic ones, in two general engagements, and took from them the country of Baden, and ſeveral other large territories.

CHAP. VI.

Of the NETHERLANDS.

SECT. I.

A General Account of the NETHERLANDS.

THE Netherlands, anciently a part of Gallia Belgica, are ſituated between 50 and 54 degrees north latitude, and between two and ſeven degrees eaſt longitude; their greateſt length is 300 miles, and the greateſt breadth 200 miles.

This country is bounded on the north and weſt by the German ocean, on the eaſt by Germany, and on the ſouth by France and Lorrain.

The general diviſion of this country is into, 1. The Seven United Provinces. 2. The French and Auſtrian Netherlands.

1. The Seven United Provinces are, 1. Holland. 2. Zealand. 3. Frieſland. 4. Groning-

ningen. 5. Overyſſel. 6. Guelderland and Zutphen. 7. Utrecht.

2. The French and Auſtrian Netherlands contain ten provinces. 1. Brabant. 2. Antwerp. 3. Malines. 4. Flanders. 5. Artois. 6. Cambreſis. 7. Namur. 8. Hainault. 9. Limburg. 10. Luxemburg.

The chief cities in the province of Holland are, Amſterdam, the metropolis of the United Provinces, Naerden, Haerlem, Leyden, Hague, Delft, Rotterdam, Dort, Williamſtadt, Gorcum and Heuſden in South Holland: and in North Holland, Alkimaer, Purmerent, Monkdam, Hoorn, Enchuyſen. Briel and Helvoetſluys in the iſle of Voorn, Goree in the iſle of Goree, Somerdyke in the iſle of Overflackee, and Burg in the iſle of Texel.

In the province of Zealand are Zerickſee, Browerſhaven, Tolen, Middleburg, Fluſhing, with ſeveral others of leſs note.

In the province of Frieſland are Lewarden, Dockum, Franker, Harlingen, and Sloot.

In Groningen are the cities of Groningen, Dam, and Winſchoten.

The chief towns in Overyſſel are Deventer, Zwoll, Coverden, and Otmarſen.

Guelderland and Zutphen contain the cities of Nimeguen, Skenkenſchans, Bommel, Arnheim, Hardwick, Zutphen, Doeſburg, Groll, Gelder, ſubject to Pruſſia, Venlo and Ruremond.

In the province of Utrecht are the cities of Utrecht, Amersfort and Dueſterdwycke.

In the province of Brabant are the cities of Grave, Boiſleduc, Breda, Steenbergen, Bergen-op-zoom, Lillo, Maeſtricht, with their territories, ſubject to the Dutch; and Bruſſels, the metropolis of the Auſtrian Netherlands, Louvain, Ramillies, Vilvorden, Landen, Antwerp and Mechlin, ſubject to the houſe of Auſtria.

In the province of Flanders are the cities of Sluys, Sas van Ghent, Axel and Hulſt in Dutch Flanders; Ghent, Bruges, Oſtend, Neuport, Ypres, Dixmude, Courtray, Tournay, Oudenarde, Dendermonde and Grandmonte in Auſtrian Flanders; Liſle, Dunkirk, Douay, Mardike, St. Amand and Graveline in French Flanders.

In the province of Artois are the cities of Arras, Terouen, St. Omer, Aire, Bethune, and St. Venant, all ſubject to France.

In Cambreſis are the cities of Cambray and Crevecæur, both ſubject to France.

In the province of Namur are the cities of Namur, Charleroy, and Charlemont, ſubject to the houſe of Auſtria.

In the province of Hainault are the cities of Mons, Aeth, Enguien, ſubject to the houſe of Auſtria; and Valenciennes, Bouchain, Conde, and the villages of Landray and Malplaquet, ſubject to the French.

In the province of Limburgh are the cities of Limburg, ſubject to the houſe of Auſtria; and Dalem, Franquemont or Valkenburgh, ſubject to the Dutch.

In the province of Luxemburg are the cities of Luxemburg, belonging to the houſe of Auſtria; Thionville and Montmedy, ſubject to the French.

In this country are only two archbiſhoprics, Cambray and Mechlin; and the biſhoprics of Antwerp, Ghent, Bruges, Namur, Tournay, Ypres, Ruremond and St. Omer's. There was formerly an archbiſhopric at Utretcht, and the biſhoprics of Haerlem, Deventer, Groningen, Lewarden and Middleburgh; but theſe were ſuppreſſed when the Seven United Provinces ſhook off the Spaniſh yoke.

In the United Provinces are five univerſities: thoſe of Leyden and Utrecht are very famous; Franker, Groningen and Hardwick are leſs conſiderable.

The univerſities of Louvain, in the Auſtrian Netherlands; and Douay and St Omer, in the French Netherlands.

The chief rivers in this county are, 1. The Rhine which enters the Netherlands in Guelderland, and divides itſelf into three branches; the 1ſt Iſſel, which runs north by Doeſburg, Zutthen and Deventer, and at laſt empties itſelf in the Zuyder ſea near Campen: 2. the Waal, and 3. the Lech, which joins the Maeſe, and runs into the German ocean near Brie. 2 The Maeſe riſes in Champagne in France, courſes northward by Namur, Liege, Hoorn, and joins the Waal at Worcum. 3. The Scheld which riſes in Picardy, runs weſt to Catelet, north-eaſt to Cambray, Tournay, Ghent and Antwerp, where it makes a capacious harbour; it afterwards divides itſelf into two large branches, the weſtern Scheld, which paſſes between South Beveland and Dutch Flanders, and falls into the German ocean a little below Fluſhing, and the Oſter Scheld, which runs north by Bergen-op-zoom, then eaſt between the iſlands of Beveland and Schowen, and diſcharges itſelf into the ſea with a violent current. 4. The Vecht runs from eaſt to weſt, through the province of Overyſſel, and falls into the Zuyder ſea near Haſſelt.

The air of theſe provinces is generally thick and foggy, and requires much to be purified by the eaſterly winds, which blow ſeverely for three or four months in the winter; and then they have very ſharp froſts, which ſhut up their harbours, rivers and canals, put a ſtop to trade, but are of infinite ſervice to the health of the inhabitants.

The ſoil of this country, owing to the riches and induſtry of its inhabitants, is now become very fruitful. Though very different in different provinces, it is in general a deep rich mould; and their marſhes and bogs are drained and rendered very good paſture ground. There are fed great numbers of cattle, which grow to a very large ſize: great quantities of butter and cheeſe are made in this country. Their flax is eſteemed the beſt in Europe; the country does not produce much corn, but as they are a nation of merchants, it may be reckoned the market of Europe, where commodities are bought often at a lower price than in the countries where they grow.

SECT.

SECT. II.

A particular Account of the moſt curious natural Productions of the Netherlands, *in the Animal, Vegetable and Foſſil Kingdoms.*

ANIMALS, VEGETABLES, *and* FOSSILS.

THE ſtork is a native of Holland, where it builds its neſt on the tops of houſes, and feeds on frogs and ſeveral noxious reptiles, on which account great regard is paid to this bird by the inhabitants, who never deſignly hurt or moleſt it; and it is ſaid, that to kill a ſtork is a capital offence by the laws of Holland.

The common ſtork, when it ſtands erect, is between three and four feet high, and its body is about the ſize of that of a gooſe; the head is large, round, and ſomewhat depreſſed at the top; the neck is long and thick; the eyes are large and piercing in their aſpect; the beak is long and robuſt, very ſharp at the point, and all the way of a beautiful red; the head and neck are white, the ſhoulders, back and ſides are alſo white; and ſo are the breaſt and belly: but the rump and part of the wings are black, the legs are red, very long and naked a great way up; the feet are of a deeper red than the legs; the toes are long and robuſt, and the claws long, black, robuſt, and not ſharp, but broad like the nails of the human fingers; the barrels of the quills, from the wings, are as large as thoſe of the ſwan, and they make the moſt laſting and uſeful pens in the world.

Towards the mouths of the rivers Rhine and Meaſe, there is found, at a certain ſeaſon of the year, a genus of inſects, called ephemera, or ephemeron, remarkable for the ſhortneſs of its life, which is not of a day's duration, as the name imports. It is a kind of fly, having four wings, ſix legs, and two ſtrait hairy tails. Midſummer is the uſual time of its appearance, and it lives only five or ſix hours, being hatched about ſix in the evening, and dying about eleven at night; but it muſt be obſerved, that before it aſſumes the figure of a fly, it exiſts three years under that of a worm, in a cell or caſe. It begins its change or metamorphoſis by ſhedding its coat, which being done and the little animal thereby rendered light and nimble, it ſpends the few hours of its life in friſking over the waters; on which the female drops her eggs, and the male his ſperm on them, whereby they are impregnated. Theſe eggs deſcend to the bottom by their own gravity, and are hatched by the warmth of the ſun into little worms, which make themſelves caſes in the clay, and feed on the ſame till the time of their metamorphoſis. To dig their cells, the wiſdom of the Creator has furniſhed them with proper members, their fore legs being formed ſomewhat like thoſe of a mole, and their toothy cheeks, reſembling the claws of lobſters, ſerving them more readily to bore the clay. This worm is of different ſizes, from one inch to three, according to its age; and is compoſed of fourteen annular diviſions or rings, the firſt of which contains the head, the three following the breaſt, and the other ten the belly and tail. As to its colour, the ſmalleſt are bluiſh, ſomewhat inclining to grey; the eyes are brown, but grow black by age; and in time the whole worm becomes of a pale yellow. Having continued in this ſtate about three years, they are transformed into winged animals, leave their cells, and riſing out of the water in the ſummer evenings, they ſkim and play about its ſurface, lay their eggs and die in a few hours. During its ſhort life, the ephemeron eats nothing, nor is it furniſhed with parts neceſſary for the reception and concoction of food; ſo that the buſineſs of generating and multiplying its kind ſeems to be the ſole end of its transformation.

There is a ſort of deſtructive reptiles called pipe-worms, which are ſometimes bred in vaſt numbers on the coaſt of Holland, and which by gnawing their way into the pile works of the dikes, where they take up their lodgings and feed upon the wood, have more than once alarmed the republic with terrible apprehenſions leſt thoſe fences ſhould be deſtroyed, which defend their country from the fury of the ocean. In the year 1731, the perſons appointed to inſpect the ſtate of the dikes, cauſed a pile that had been driven down in the ſea in 1718, to be drawn up, which appeared ſound on the outſide, but being ſplit in two, was found gnawed through and through by the worms that were lodged in it, ſome of which were above a foot long, though they ſeldom exceed ſeven or eight inches. Another pile, almoſt new, being taken up and ſplit, was found full of little holes from end to end, about the diameter of the ſhaft of a tobacco-pipe.

The head of this ſea-worm is covered with a ſort of helmet, conſiſting of two ſeparate ſhells, one on the right ſide, the other on the left, with the points of which it penetrates or bores the wood, the duſt or powder whereof is the food of the animal. The fore-part or body of the worm is of a whitiſh ſubſtance, reſembling an oyſter both in taſte and colour, but is not near ſo firm, being ſo extremely ſoft and tender, that it can hardly be touched without breaking. The hind-part is of a firmer texture, and of a greyiſh colour, terminated with a binding or annular protuberance of a ſinewy ſubſtance; from whence proceed two appendages, like claws, which are as hard as the helmet, and ſmooth and white as ivory. Between theſe are two little tails, one ſtrait, the other ſomewhat curled at the extremity; both which the worm can lengthen, flatten, ſwell and contract at pleaſure.

There are no native vegetables or foſſils in the Netherlands, which, as curioſities, deſerve any mention.

SECT. III.

An Hiſtorical Account of the moſt remarkable Inundations, and other public Calamities, which have, at different times, viſited the Inhabitants of the Netherlands.

THE United Provinces lie ſo low and flat, that they are in perpetual danger of being overflowed by the ocean; againſt the irruptions of which, the inhabitants have guarded by ſurpriſing banks, or dikes, the keeping of which in repair, is attended with a vaſt expence, and annually employs more men, as Sir William Temple was informed, than all the corn of the province of Holland could maintain. They have alſo made and ſupport, with wonderful care and induſtry, a great number of canals, which ſerve to drain off, and receive the waters that would otherwiſe drown their lands: Sir William Temple obſerves, that Holland appears as if, after a long contention betweeen land and water, which it ſhould belong to, it had, at laſt, been divided between them; and from the great rivers, and ſurpriſing number of canals that are found in this province, which not only lead to every great town, but almoſt to every village and farm-houſe in the country, and the prodigious multitude of ſails that are ſeen moving upon them, one would be apt to imagine that the water had ſhared the inhabitants with the land, and that the people who live in boats hold ſome proportion with thoſe who live in houſes.

The bailiwick of Dort, which is now an iſland, was part of the main land, till the year 1421, when it was ſeparated from the continent, by a tempeſt, which drove back the waters of the Maeſe and the Meruwee, with ſuch violence, that they overflowed their banks, and ſwallowed up a large tract of country between Dort and Brabant, with ſeventy villages, and an hundred thouſand inhabitants.

Near the Zuyder ſea, in the province of Frieſland, there is a tract of bituminous earth, which ſupplies the neighbouring inhabitants with turf, and which, ſome centuries ago, as Guiciardini relate, took fire, the fury of which could not be ſtopped by any art or induſtry whatever, till after it had burnt a vaſt tract of country, when it was extinguiſhed by a ſubterraneous inundation of water, which burſt out in ſuch a quantity, as formed a conſiderable lake, now called Jonkermeer. Becanus relates, that the like happened in Brabant, in 1551, and in the province of Utrecht, in 1567.

There is great reaſon to believe that the Zuyder ſea has been formed by ſucceſſive inundations; and it is ſaid, that about the year 1250 there was a paſſage by land almoſt from the city of Straveren, in the province of Frieſland, thro' a great foreſt, to Enchuyſen, in North Holland, which is now a road for ſhips. In the Zuyder ſea, about a quarter of a league from Straveren, there are to be ſeen, a little under water, the ruins of an old monaſtery, which the mariners carefully avoid; and the greateſt part of the old city of Straveren has been ſwallowed up by this ſea.

SECT. IV.

An Account of the moſt celebrated Inventions, Diſcoveries, &c. of the Inhabitants of the Netherlands.

THE world is indebted to the United Provinces for ſeveral great and uſeful inventions, among which is the teleſcope, one of the nobleſt the moderns can boaſt; by means of which, the wonders of the heavens are laid open to our view, and aſtronomy is brought to a degree of perfection the antients could never arrive at, for want of ſuch an inſtrument. The teleſcope, with the concave eye-glaſs, was firſt invented by a mechanic of Middleburg, in Zealand, called Zachary Johannides, about the year 1590; though John Lipperhoy, another Dutchman, is candidate for the ſame diſcovery, from whence this ſort of tube is called *Tubus Batavus.*

None of the teleſcopes, however, made by theſe artificers were above eighteen inches long, nor proper for aſtronomical obſervations: but the famous Galileo, aſtronomer to the Grand Duke of Tuſcany, having heard of a ſort of optic glaſs made in Holland, which brought objects nearer, ſet himſelf to conſider how it could be effected; and having ground two pieces of glaſs into form as well as he could, he fitted them to the two ends of an organ-pipe, and by this means made great diſcoveries in the celeſtial regions, which he ſhewed to the Venetian nobility on the tower of St. Mark. From this time, Galileo applied himſelf wholly to the improving the teleſcope; and hence the honour of the invention is frequently aſcribed to him, and the inſtrument has been denominated Galileo's Tube.

All the diſcoveries made by this ſagacious aſtronomer, tended to confirm the truth of the Copernican ſyſtem, which is now generally received as the true ſyſtem of the world. In the year 1610, he diſcovered the four Satellites, or moons of Jupiter, as Simon Marius, mathematician to the Elector of Brandenburgh, did about the ſame time, but his teleſcope was not good enough to reach thoſe of Saturn, though he found that planet made an odd appearance, which very much perplexed the aſtronomers to account for, and various hypotheſes were formed for that purpoſe. Theſe all ſeemed trifling to M. Huygens, who was born at the Hague in 1629, and who applied himſelf to improve the grinding of glaſſes, and perfecting long teleſcopes, in order to obtain a more accurate knowledge of Saturn and his appendage; and accordingly in 1655, he conſtructed a teleſcope of twelve feet, with which he diſcovered a ſtupendous ring, encompaſſing the body of that planet. With a larger tube he diſcerned a ſatellite revolving round him, and four more were afterwards diſcovered by Caſſini.

It was Galileo who likewiſe firſt obſerved ſeveral dark ſpots paſſing over the ſun's diſk, from whence he appears to have a motion round his axis; and the like phænomena are obſervable on the ſurface of ſome of the planets.

Teleſcopes are of two ſorts, viz refracting and reflecting. A refracting teleſcope conſiſts of an object-glaſs in the focus, whereof the image of a diſtant object is formed, but in an inverted poſition. This image may be viewed by a ſingle lens, or eye-glaſs, as is uſually done in viewing the heavenly bodies, becauſe it is not material whether they appear erect or inverted; but to view terreſtrial objects, whoſe image we would have erect, two other lenſes are neceſſary. If inſtead of a convex glaſs, we uſe a concave one of the ſame focal length, it will render the object erect, equally magnified, and more diſtinct and bright: but the diſadvantage of this glaſs is, that it admits of only a ſmall area, or field of view, and therefore is not fit to be uſed when we would ſee much of an object, or take in a great compaſs; it is very uſeful, however, in viewing the planets and their ſatellites, Saturn's ring, &c. and this is properly the Galilean teleſcope.

But the reflecting teleſcope is the nobleſt and moſt uſeful of all others, which conſiſt chiefly of ſpecula, or mirrors, inſtead of lenſes, and is the invention of the great Sir Iſaac Newton. What put him upon applying his thoughts this way, was the indiſtinctneſs of viſion, by refracting teleſcopes, which he found was owing to the different refrangibility of the rays of light; from whence he concluded, that refraction was too unequal a principle, and that lenſes, of whatever figures, and how truly ſoever ground, would never ſuffice for the perfection of teleſcopes. Upon this he had recourſe to a more equable principle, viz. that of reflection, and made a teleſcopſe conſiſting of mirrors, the firſt hint whereof he owns he took from Dr. Gregory's optics. This inſtrument has ſince received ſome farther improvements, inſomuch that a reflecting teleſcope, not more than twenty inches long, may be made to magnify an object as much as a refracting one, ſixteen feet in length.

To the invention of the teleſcope ſucceeded that of the microſcope, an inſtrument contrived to magnify the ſmalleſt objects, ſo that they may be viewed diſtinctly. By whom microſcopes were invented, is not certainly known, but probably we owe the diſcovery to the Hollanders, ſince Huygens tells us, that Drebel, a Dutchman, had the firſt microſcope in 1621, and that he was reputed the inventor of it, though the honour is clamed by Fontana, a Neapolitan, who dates it from the ſame year.

They are properly diſtinguiſhed into ſingle and compound, the former conſiſting only of one glaſs, and the latter of ſeveral duly combined: and ſome of theſe are contrived to do their office by refraction, others by reflection, and others by refraction and reflection conjointly. A ſingle microſcope is either a lens or a ſpherule; but as little glaſs ſpheres may be made much ſmaller than any lens, ſo the beſt microſcopes, or thoſe which magnify moſt, are of the ſpherical kind. Mr. Gray, and others after him, have contrived water-microſcopes, conſiſting of ſpherules or lenſes of water inſtead of glaſs; but theſe magnify leſs, and are therefore leſs eſteemed. Hollow glaſs ſpheres, of the diameter of half a digit, filled with ſpirit of wine, are frequently uſed for microſcopes, but theſe magnify ſtill leſs than the former.

With regard to double or compound microſcopes, the beſt are thoſe which conſiſt of one object-glaſs, and two eye-glaſſes; for as objects appear dim when viewed through many glaſſes, part of the rays being reflected in paſſing through each, the multiplying of lenſes is not adviſeable. The double microſcope, contrived by our countryman Mr. Marſhal, is of a commodious and curious ſtructure; but the pocket-microſcope of Mr. Martin, furniſhed with a micrometer to meaſure the ſmalleſt parts of an object, is perhaps the plaineſt, the moſt expeditious for uſe, and the cheapeſt of any of the compound ſort hitherto invented.

Here it may be obſerved, that any teleſcope is converted into a microſcope by removing the object-glaſs, to a greater diſtance from the eye-glaſs; and ſince the diſtance of the image is various, according to the diſtance of the object from the focus, and it is magnified the more as its diſtance from the object-glaſs is greater, the ſame teleſcope may be ſucceſſively converted into microſcopes which magnify the object in different degrees.

Many ingenious foreigners, as well as our countrymen, have applied themſelves with great diligence to improve the miſcroſcope, and by means thereof to lay open the ſecret wonders of nature: and indeed what ſurpriſing diſcoveries may we not expect in the minute parts of the creation, from an inſtrument that makes a ſmall grain of ſand appear as big as a nut, or a hair of the head above an inch in diameter? but of all thoſe who have bent their ſtudies this way, none have purſued them with more unwearied application, or made more curious and important diſcoveries, than the celebrated M. Leewenhoeck,

hoeck, a native of Holland; and therefore as we are treating of that country, it may not be amiſs to be a little more particular with regard to that gentleman's microſcopes, great part of which he bequeathed to the Royal Society, at his deceaſe.

This legacy conſiſts of a ſmall Indian cabinet, in the drawers of which are thirteen little boxes, or caſes, each containing two microſcopes, handſomely fitted up in ſilver; all which, not only the glaſſes, but the apparatus for managing them, were made by M. Leewenhoeck, himſelf. Each microſcope had an object placed before it, and the whole was accompanied with a regiſter of the ſame in his own hand-writing as being deſirous the gentlemen of the ſociety ſhould be enabled without trouble to examine ſeveral of thoſe objects on which he had made the moſt conſiderable diſcoveries, and which he thought in a particular manner deſerved their attention. Amongſt theſe objects are ſome globules of blood; the eye of a gnat; ſmall pipes which compoſe the tooth of an elephant; part of the chryſtalline humour from the eye of a whale; the inſtruments from whence a ſpider ſpins the threads that compoſe its web; the *animalcula in ſemine maſculino* of a lamb, taken from the teſticle; a bunch of hair from the inſect called a hair worm; the double ſilk ſpun by the worm; the eye of a fly; and ſeveral other ſubjects proper for microſcopical obſervations.

It would be endleſs to enter into a detail of what is to be obſerved in theſe objects, or to give a full account of M. Leewenhoeck's diſcoveries; they are ſo numerous as to make up a conſiderable part of the Philoſophical Tranſactions, and when collected together fill four volumes in quarto, which were publiſhed by himſelf, at different times; and are of ſuch conſequence, as to have opened new ſcenes in ſome parts of natural philoſophy.

As to the ſtructure of theſe inſtruments, it is the ſame in all, and the apparatus is very ſimple and convenient. They are all ſingle microſcopes, conſiſting each of a very ſmall double convex glaſs, let into a ſocket, between two ſilver plates rivetted together and pierced with a ſmall hole. The object is placed on a ſilver point or needle, which by means of ſcrews of the ſame metal, may be turned about, raiſed or depreſſed, and brought nearer, or removed farther from the glaſs, as the eye of the obſerver, the nature of the object, and the convenient examination of its ſeveral parts may require. If the objects were ſolid, M. Leewenhoeck fixed them to this ſilver point with glue; but if fluid, or of ſuch a nature as not to be commodiouſly viewed unleſs ſpread upon glaſs, he firſt fitted them on a little plate of talc, or very thin blown glaſs, which he then glued to the needle. For viewing the circulation of the blood, and ſome other obſervations, he had a different apparatus.

The glaſſes of theſe microſcopes are all exceeding clear, and ſhew the object very bright and diſtinct; which is undoubtedly owing to M. Leewenhoeck's great care in the choice of his glaſs, and his exactneſs in giving it the true figure. Their powers of magnifying are different, as may be requiſite for different ſorts of objects; but being all ground glaſſes, none of them are ſo ſmall, nor conſequently magnify to ſo great a degree, as ſome of thoſe little drops or ſpherules frequently uſed in other microſcopes: however, their diſtinctneſs much exceeds what is uſually met with in glaſſes of that ſort, which was the end M. Luenhoeck principally aimed at; for though he had glaſſes by him of an extraordinary ſmallneſs for upwards of forty years, he made very little uſe of them, as having found, in a long courſe of experience, that the greateſt diſcoveries were to be made with ſuch glaſſes, as, magnifying but moderately, exhibited the object with the moſt perfect brightneſs and diſtinctneſs.

There is another inſtrument ſaid to have been firſt contrived by Drebel, the Dutchman already mentioned, viz. a Thermometer, or what is popularly called a Weather-Glaſs. As this inſtrument is deſigned to ſhew the various degrees of heat and cold, by the elaſtic or expanſive power of fluid bodies, ſo divers methods and forms of conſtructing it have been thought of at different times; firſt air, then oil, then ſpirit of wine, and laſtly quickſilver, having been every way applied in this experiment. The moſt common thermometer is that made with ſpirit of wine, whoſe ſtructure is as follows. A glaſs ball, fixed to the bottom of a narrow tube, is filled with rectified ſpirit of wine, tinged with a little cochineal, and the top of the tube is hermitically ſealed by the flame of a lamp, which ſecures it from the preſſure of the air. Now, ſpirit of wine rarefying and condenſing very conſiderably, as the heat of the ambient air increaſes, the ſpirit is dilated, and conſequently aſcends in the tube; and as the heat decreaſes, the ſpirit is condenſed, and conſequently deſcends; ſo that the different degrees of heat and cold are know by the aſcent and deſcent of the liquor, being ſhewn by a graduated ſcale on the board to which the tube is affixed. The ball muſt be large in proportion to the bore of the tube; and that the heat or cold may ſooner penetrate the innermoſt parts of the liquor, the ball ſhould not be ſpherical, but oblong and flatted like a French flaſk.

Though the invention of paper is not aſcribed to the Dutch, yet, as that curious and uſeful manufacture has been no where carried to greater perfection than in Holland, this may be no improper place to treat of it. The method of manufacturing paper is as follows:

The linen rags of which our European paper is made, being carried to the mill, are firſt ſorted, then waſhed very clean in puncheons, whoſe ſides are grated with ſtrong wires, and the bottom bored full of holes. After this they are fermented, that is, laid in ſquare heaps cloſe covered with ſacking till they ſweat and rot, which is commonly done in four or five days. When duly fermented they are twiſted into handfuls, cut ſmall, and thrown into oval mortars made of well-ſeaſoned oak, about half a yard deep, with an iron plate at bottom an inch thick, eight inches broad, and thirty inches long. In the middle is a waſhing-block, with fine holes in it, and a piece of hair-ſieve faſtened on the inſide, ſo that nothing can paſs out except dirty water. Theſe mortars are continually ſupplied with water by little troughs from a ciſtern filled by buckets faſtened to the floats of the great wheel, which raiſes the wooden hammers for pounding the rags in the mortars. When the rags are beaten to a certain degree called the firſt ſtuff, the pulp is removed into preſſes, where it is left to mellow about a week; then it is put into clean mortars, pounded afreſh, and removed into preſſes or boxes as before, in which ſtate it is called the ſecond ſtuff. The maſs being beaten a third time, till it reſembles flour and water without any lumps, it is thereby fitted for the pit-mortar, where it is perfectly diſſolved, and is then carried to the vat to be formed into paper. The vat is rightly primed as they call it, when the liquor has ſuch a proportion of the pulp, as that the mould dipped into it will take up juſt enough to make a ſheet of paper of the thickneſs required.

The mould is a ſquare ſieve about an inch deep, having a braſs-wire bottom, reſting on ſticks to prevent its bagging and keep it exactly horizontal. This mould the maker dips into the liquor, and gives it a ſhake as he takes it out to clear the water from the pulp. He then ſlides it along a groove to the coucher, who turns the ſheet, lays it on a felt, and returns the mould to the maker, who by this time has prepared a ſecond ſheet in another mould: and thus they proceed, laying alternately a ſheet and a felt, till they have made ſix quires of paper, which is called a poſt. This quantity is then put under a preſs, and by the ſtrength of four or five men all the water is preſſed from it; after which it is ſeparated from the felts, laid regularly one ſheet upon another, and having undergone a ſecond preſſing it is hung up to dry. When ſufficiently dried it is taken off the lines, rubbed ſmooth with the hands, and laid by till ſized, which is the next operation. For this they chuſe a fine temperate day, and having boiled a proper quantity of clean parchment or vellum ſhavings till they come to a ſize, they prepare a fine cloth, on which they ſtrew a due proportion of white vitriol and roch-alum finely powdered, and ſtrain the ſize through it into a large tub, wherein they dip as much paper at once as they can conveniently hold, and with a quick motion give every ſheet its ſhare of the ſize, which muſt be as hot as the hand can well bear it. After this it is preſſed, hung up ſheet by ſheet to dry, and then being ſorted is told into quires, which are folded, preſſed very hard, and ſo tied up in reams or bundles for ſale.

The manner of making marbled paper is as follows: A trough is provided, either made of lead or wood well joined and pitched, of the ſhape and dimenſions of the paper to be marbled, and about four fingers deep, which is to contain the liquor uſed in the operation. This liquor is made by macerating a quantity of gum tragacanth four or five days in fair water, which is to be ſtirred from time to time, and freſh water daily added, till it be of a conſiſtence ſomewhat thinner than oil, and then it is ſtrained into the trough for uſe. The colours to be applied on the ſurface of this liquor, which are uſually blue, red, green, and yellow, being prepared of proper ingredients, there is added to them a little ox or fiſh gall; and if the colours, when ſprinkled on the liquor do not dilate themſelves ſufficiently, more gall muſt be added; but if they ſpread too much, the fault muſt be corrected by adding more of the colour. The colours being ranged in gallipots on the table where the trough is placed, they begin by dipping a bruſh of hog's hair into any colour, commonly the blue firſt, and ſprinkling it on the ſurface of the liquor; then the red is applied in the like manner, but with another bruſh; afterwards the yellow, and laſtly the green. When all the colours are thus floating on the liquor, they uſe a pointed ſtick, which being drawn with addreſs from one ſide of the trough to the other, ſtirs up the liquor and fluctuating colours; after which they draw a comb over the ſurface of the liquor, permitting only the teeth to enter; and this being performed with a gentle and uniform motion, makes thoſe clouds and undulations on which the beauty of the paper very much depends. The colours lying in this poſture, the operator applies on them a ſheet of white paper previouſly moiſtened, which requires a dexterity that can only be obtained by practice, the ſurface of the liquor and paper being to meet equally in all parts; which done, before the colours have time to ſoak through, he lifts it up nimbly, and ſpreads it on a board, where having lain a while, it is hung upon a line to dry, and is then poliſhed with a marble ſtone or knob of ivory.

It muſt be obſerved, that the ſprinkling of the colours is to be renewed, and the other operations to be performed with the ſtick and comb, at every application of a freſh ſheet of paper, becauſe each ſheet takes off all the colours from the liquor.

SECT. V.

Particular Deſcriptions of the moſt remarkable Public Buildings, and other ſingular Productions of Art, in the Netherlands.

THE churches of Amſterdam are in general very handſome ſtructures, adorned with fine monuments of the Dutch admirals, and other eminent men who have diſtinguiſhed themſelves in the ſervice of their country. A church, known by the name of the Old Church, is a magnificent Gothic edifice, with a beautiful and lofty ſteeple; and another church, diſtinguiſhed by the name of the New Church, which was burnt down in 1645, but is now rebuilt, is a fabric worthy the attention of every traveller of curioſity. A tower of prodigious height was intended for it, and a foundation laid accordingly, upon more than ſix thouſand piles, which, however, not proving ſtrong enough, the deſign has not been compleated. In this church are ſeveral windows finely painted, on one of which is repreſented the liberality of the citizens, in preſenting the emperor Maximilian with a large ſum of money, and his beſtowing an imperial crown for a creſt to the city. The grate of caſt braſs before the chancel, being kept very bright, makes a pretty appearance; and the organ which is ſupported by columns of coſtly marble, is remarkable for its number of pipes, and for its imitation of human voices: but the ſumptuous monument of the brave admiral de Ruyter is perhaps the nobleſt ornament of this church, and deſerves the attention of thoſe who have any taſte for excellent ſculpture.

The great church at the Hague is a magnificent ſtructure. The choir is ſeparated from the body of the church by a fine braſs baluſtrade, which kind of ornament is to be ſeen in moſt of the churches in Holland. Many perſons of diſtinction are interred in this church, and amongſt the reſt the baron of Opdam, one of the moſt famous admirals that Holland ever produced. His ſtately monument was erected at the expence of the republic, a tribute which the Dutch generally pay to their admirals and other officers who deſerved well of their country. Upon the monument their is a long inſcription, giving an account of this baron's great actions, and particularly of the ſea-fight with the Engliſh in 1665, wherein he was killed, his ſhip being blown up in the engagement, ſome ſay by accident, and others by his own order. In this church there is a noble organ, as there is in moſt churches in the cities and great towns throughout the United Provinces.

The new church at Delft is a very majeſtic building, its ſteeple one of the higheſt and fineſt in the Low Countries, and the chimes the moſt harmonious imaginable, conſiſting of ſeveral hundred bells of different ſizes. But this church is moſt remarkable for a magnificent mauſoleum erected over the remains of William the Firſt, prince of Orange, the founder of the republic, who was aſſaſſinated at Delft by an emiſſary of the king of Spain. His ſtatute is of braſs, completely armed, with ſeveral emblematical figures round him, and proper inſcriptions ; the whole of admirable workmanſhip, and executed in a maſterly taſte.

The great church at Gouda is one of the nobleſt ſtructures of the kind in Holland, and has a ſtately tower, which, together with the church, was burnt down by lightning in 1552, but was rebuilt with more ſplendor than before. The paintings on the windows, which repreſent in the moſt lively colours ſeveral pieces of ſacred and prophane hiſtory, are ſcarce to be paralleled in Europe. They are the work of two brothers, Theodore and Walter Crabeth, who were natives of Gouda, and whoſe performances are reckonded much more beautiful than any thing done by later artiſts in that manner of painting.

Moſt of the churches at Middleburg in Zealand are ſumptuous edifices, and worthy a traveller's attention. The tower with a clock on the top of it is particularly remarkable, being very lofty ; and the clock, with its dial, is ſaid to have coſt 15,000 l. ſterling.

At Utretcht the churches in general are magnificent, eſpecially that of St. Martin, formerly the cathedral, where Charles the Fifth, in 1536, held a ſolemn meeting of the knights of the Golden Fleece. It is uſually called the Dome, and has a high tower, to which there is an aſcent by 460 ſteps, from whence there is a fine proſpect round the country, of fifteen or ſixteen cities and a vaſt number of conſiderable villages.

The church of St. Mary in the ſame city, commonly called the Engliſh church, is much taken notice of on account of a ſtory concerning one of its pillars. When the workmen began the building, it is ſaid they met with a quagmire where the foundation of this pillar was intended to be laid, and none of them knew how to ſurmount the difficulty. At length one Fuſo, reckoned an ignorant man, undertook to do it, but aſked an exorbitant price; which the biſhop not being willing to give, privately dealt with the man's own ſon to pump out the ſecret, which was to cover the quag with bulls-hides. This being done accordingly, and Fuſo diſappointed of his expected reward, he was ſo enraged that he ſtabbed the biſhop, as the ſtory relates. There is a Latin inſcription on the pillar, aſſerting its being built on ſuch a foundation.

At Nimeguen, in Gulderland, there are ſeveral fine churches, the chief of which is that of St. Stephen, a noble ſtructure, whoſe roof is ſupported by thirty-five pillars of excellent workmanſhip; and its lofty tower, which was beat down in the war with Spain, has been ſince rebuilt with extraordinary magnificence. In the choir of this church is the tomb of Catharine of Bourbon, wife of Adolphus, duke of Guelderland, with her ſtatue in braſs, and ſixteen coats of arms denoting her deſcent.

The principal church of Zutphen, in the ſame province, is alſo a ſumptuous fabric, with a very high ſteeple built in the year 1635, after having been twice deſtroyed by lightning. It is noted for a fine monument of Otho the Third, count of Naſſau, and his lady; and for a large braſs font of very curious workmanſhip.

In the Dutch Brabant we find ſeveral ſtately and beautiful churches, particularly the great church at Breda, which has a handſome ſpire 362 feet high, and is adorned with many noble monuments of perſons of diſtinction. That of Anglebert the Second, count of Naſſau, who is repreſented in armour as when alive, is very much admired; the whole being ſuch an exact reſemblance of nature, that it is hardly poſſible for human heart to do any thing more perfect.

To this we may add the cathedral at Bois-le-duc, which is one of the moſt ſumptuous churches in the Netherlands.

The cathedral of the city of Antwerp, in the Auſtrian Netherlands, is a moſt magnificent ſtructure, being more than 500 feet long, and 230 broad; and its ſteeple may be juſtly ranked amongſt the nobleſt in Europe. It is 466 feet high, and is ſuch an excellent piece of architecture, that the emperor Charles the Fifth, when he made his entry into Antwerp, ſaid, 'It 'ought to be put into a caſe, and ſhewed only once a year for a rarity.' The altars and chapels within this great church are finely adorned with paintings by Rubens and other eminent maſters. Amongſt theſe are ſome good pieces of Quintin Maſſey, a blackſmith of Antwerp, whoſe ſtory is well known.

The Jeſuits church in this city is a ſtructure which is equalled by few, and ſcarce excelled by any, whether we regard the materials, the workmanſhip, or the variety of fine paintings done by the celebrated Rubens. The inſide of it is lined with white marble, and the roof ſupported by colums of the ſame materials. The great altar is alſo of marble, intermixed with gold, porphyry, and jaſper. The adjoining chapel of the Virgin is no leſs beautiful, where Rubens has painted the aſſumption over the altar, which he uſed to call his favourite piece; and round it are ſix ſtatues of alabaſter, repreſenting the founders of the chapel.

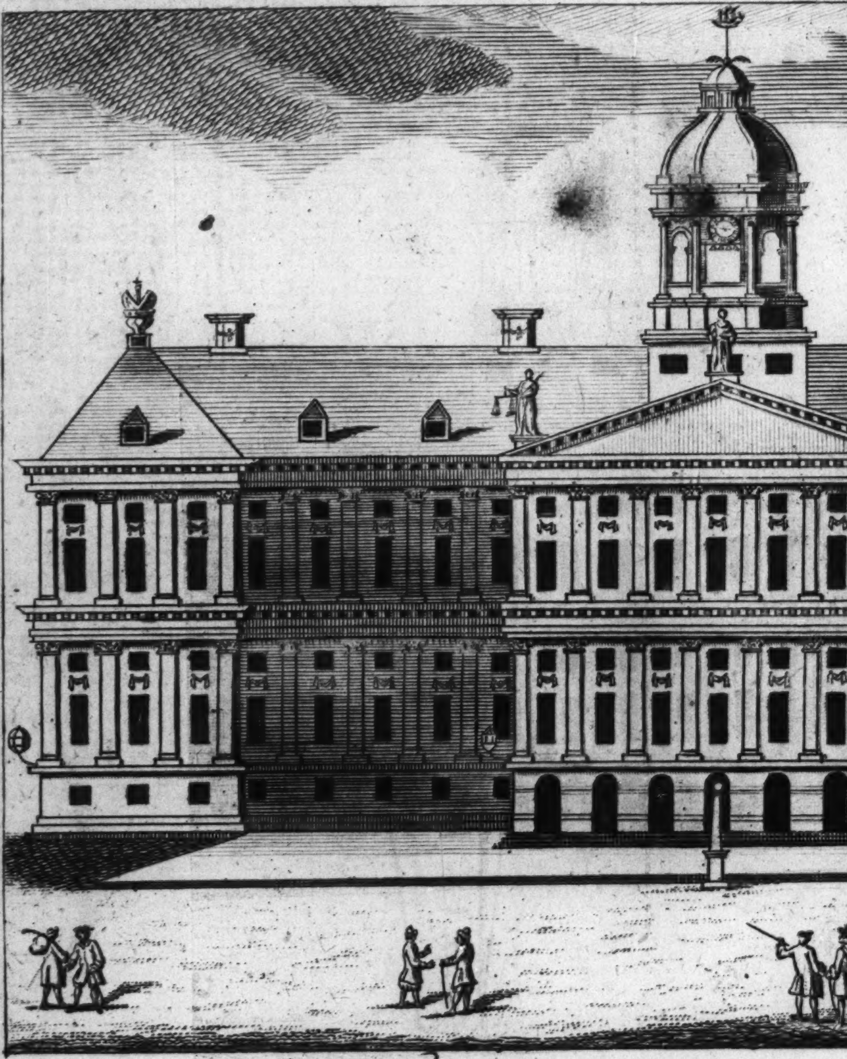
There are few palaces in the Netherlands that merit much notice. The principal appears to be a palace belonging to the prince of Orange, which ſtands in a pleaſant wood about a mile from the Hague, and is commonly called the Houſe in the Wood, on account of its ſituation. It is a neat and beautiful ſtructure, built by Amelia, widow of Henry-Frederic, prince of Orange, having a large grove before it, and a ſpacious garden behind. The houſe has a moat round it, over which we paſs by a draw-bridge, and enter through a gate into a large ſhady avenue which leads us to the front of the building. Here we aſcend a grand flight of ſteps, on each ſide whereof there is a ſtatue, one of Ceres, the other of Pomona, both ſomething bigger than the life, and of admirable workmanſhip. On the right are likewiſe placed the ſtatues of William the Firſt, and prince Maurice, and on the left thoſe of Henry-Frederic and William the Second, all of white marble. The grand ſalon, which is of an octagonal form, takes up the body of the building, and is exceeding beautiful and magnificent, the floor being walnut-tree, and covered with rich carpets. But the principal ornament of this ſalon, and indeed of the whole palace are the fine paintings done by the moſt eminent Flemiſh maſters, and particularly the celebrated Rubens. That of Vulcan in his ſhop, which is placed near the chimney, is the work of his pencil, and is reckoned the beſt piece in the whole collection. The millitary exploits of Henry-Frederic, which take up one ſide of the ſalon, and the picture of the princeſs Amelia in mourning, are likewiſe excellent performances; and in one of the drawing-rooms there is a flower-piece valued at 1500l. ſterling. The apartments are furniſhed in an elegant and ſumptuous manner; and there is a rail of curious Japan work, that runs along the foot of the princeſs's bed, ſaid to have coſt near three thouſand pounds, being inlaid with mother of pearl and precious ſtones, which ſparkle like the ſtars in a dark night.

On the late prince's marriage with the princeſs royal of Great-Britain, there were two wings added to this charming ſeat, which make it much more commodious for a family than it was before. The new building is in the ſame taſte with the old, and the furniture and ornaments every way ſuitable to the beauty of the ſtructure.

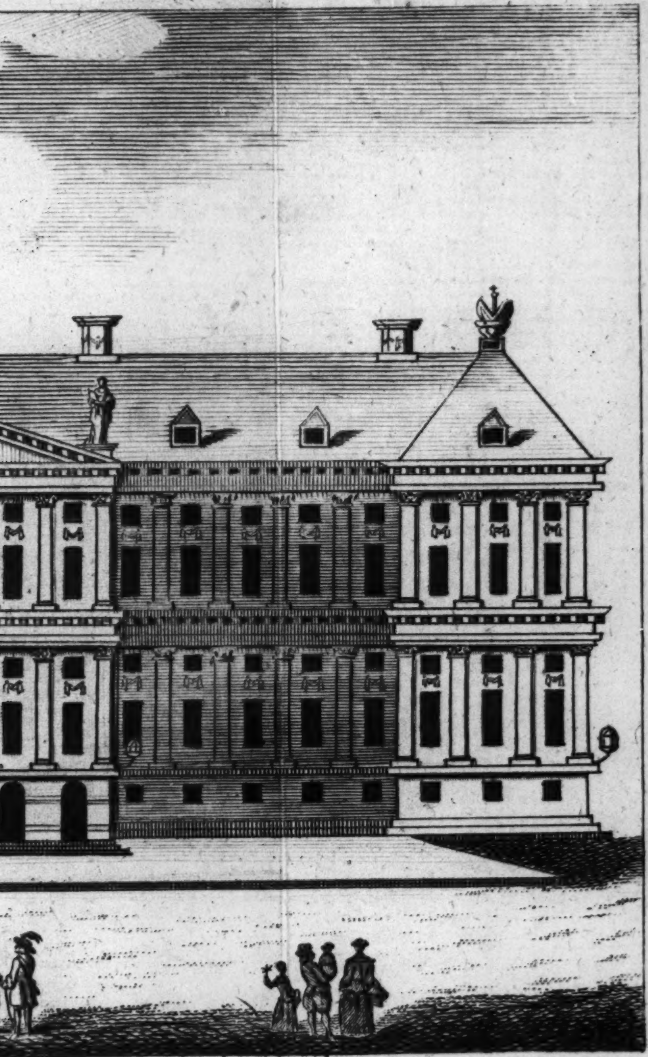
At Bruſſels is an imperial palace ſtanding on the top of a hill, with a large ſquare before it, incloſed with pillars of braſs, ſupporting ſtatues of ſeveral of the emperors, and of the dukes of Brabant, in braſs gilt, and as large as life. Fronting this palace are ſeveral other fine ſtatues; the royal apartments are very magnificent but irregular, having been built at different times. The garden is adorned with curious water-works, and behind the garden is a beautiful park, where company are allowed to walk. At the extremity of this park is a fine pleaſure-houſe, built by the emperor Charles the Fifth, together with an eccho, which makes twelve diſtinct replies.

The Stadthouſe of Amſterdam is generally thought to ſurpaſs any thing of the kind in Europe. This ſuperb edifice is all of freeſtone, built upon 13659 piles, driven into the ground cloſe to one another; and the firſt ſtone of it was laid on the 28th of October, 1648. It is a quadrangular building, 282 feet in length, 235 in depth, 90 feet high in front, and 160 to the top of the cupola. It has above four hundred windows, and is adorned with a great number of pilaſters of the Corinthian order. On the pediment in the centre of the front is an admirable piece of ſculpture in relievo, repreſenting the city of Amſterdam under the figure of a woman ſitting in a chair ſupported by two lions, and holding on her knee the arms of the city. In her hand ſhe has an olive-branch, the emblem of peace; and is attended by ſea-nymphs, who preſent her with crowns of palm and laurel. Here are alſo repreſented Nepton and his tritons, with ſeveral water-animals; the whole in marble, and the workmanſhip extremely curious. At each ſide and on the top of this pediment are placed three brazen ſtatues, repreſenting Juſtice, Fortitude, and Prudenee; and juſt behind it there is a handſome dome or cupola, wherein hangs a great number of bells, which compoſe very muſical chimes. In this front of the Stadthouſe there are ſeven doors, or rather open arches, alluding, as is ſuppoſed, to the Seven Provinces of the republic.

The back front of the building has alſo a pediment, with an excellent baſs-relief in mar-



The Stadhouse at Am



msterdam

ble, repreſenting the extenſive commerce of the city of Amſterdam, under the emble of a woman with a winged cap on her head, to whom the four parts of the world, denoted by proper figures, offer preſents of their reſpective productions. On the ſides of the pediment are the ſtatues of Peace and Plenty, and on the top of it ſtands a large Atlas with a globe of copper on his ſhoulders.

When we come to view the inſide of this ſtately fabric, we are aſtoniſhed at the profuſion of fine paintings, ſculptures, and other ornaments. The courts of judicature, and indeed the greateſt part of the building, are lined with marble, and adorned with curious emblematical figures, or hiſtorical pieces, relating to the diſtribution of juſtice; particularly a repreſentation of Solomon giving judgment between the two harlots; and at the entrance of every office or chamber we find ſome ſculpture, or other decoration, adapted to the nature of the buſineſs therein tranſacted; all which are executed with ſo much art that they are admired by the niceſt judges.

We aſcend up ſtairs to the great hall, at the entrance of which are two ſtrong folding-doors of braſs, and ſeveral fine marble columns twenty feet high, ſupporting a moſt beautiful cornice. Over this cornice ſits the figure of a woman repreſenting the city, the arms whereof ſhe wears on her breaſt, and an eagle places on her head an imperial crown. At her feet are two lions;

on one ſide is a ſtatue of Fortitude, and that of Minerva on the other; and four naked children hover round her with cornucopias pouring out fruits and flowers. The beauty and magnificence of this hall are hardly to be deſcribed; the ſtately marble pillars, the repreſentation of the four elements at the corners, the exquiſite paintings, ſtatues, and various other ornaments, at once ſurpriſe and charm the ſpectator: but the greateſt curioſity of all is wrought on its marble floor, on which the celeſtial and terreſtial globes are repreſented in planiſphere; the conſtellations in the one, and the ſeveral parts of the earth in the other, with the principal circles, being all delineated in braſs very neatly laid into the marble, and the names of the countries expreſſed in the ſame manner. Each hemiſphere is about twenty-two feet in diameter, and the whole is admired by all that ſee it as a moſt ingenious performance.

In a hill near Maeſtricht there is a remarkable ſtone-quarry which has one entrance by the ſide of the Maeſe, where carts can paſs with eaſe, and unload the ſtones on the bank of the river. The quarry runs parallel with the horizon, and by the light of torches affords one of the moſt ſurpriſing proſpects imaginable; for the walks are ſpacious and level, and the earth overhead is ſupported by ſeveral thouſands of ſquare pillars moſt of them twenty feet high, and all wrought with ſuch neatneſs and regularity, that it looks like a ſubterraneous palace. There is very little rubbiſh in this quarry, which is owing to the goodneſs of the ſtone, and the carefulneſs of the workmen; and in ſeveral places are little pools of water, which perhaps have been made for beaſts to drink, and other uſes. When armies march that way, the quarry affords a ſecure retreat for the country people, who convey thither their horſes, cattle, and moveable furniture. It is capable of ſheltering an hundred thouſand men.

At Scheveling, a village on the ſea coaſt, about two miles from the Hague, is ſtill preſerved the model of a land-ſhip, or ſailing chariot, which was made for prince Maurice of Naſſau, by Stevinus, a celebrated mathematician. In form it reſembled a boat, was fixed upon four wheels of equal bigneſs, had two ſails, was ſteered by a rudder, placed between the two hindmoſt wheels, and was ſtopped, either by letting down the ſails, or turning it from the wind. In this machine the prince and his companions uſed to divert themſelves, by ſailing along the ſmooth ſtrand; and it is ſaid that it was contrived to move with ſuch eaſe and ſwiftneſs, that a briſk gale would carry eight or ten perſons from Scheveling to Petten in three or four hours time, which is about fifty Engliſh miles, the perſon at the helm directing its courſe with very little labour. Biſhop Wilkins mentions ſeveral great men who have deſcribed and admired this curious invention; but all that is reported concerning the ſwiftneſs of its motion is ſcarce credible.

SECT. VI.

Curious Remains of Antiquity in the Netherlands; *remarkable Laws and Cuſtoms of the Inhabitants; with a ſummary View of the moſt extraordinary Revolutions among them.*

REMAINS *of* ANTIQUITY, LAWS *and* CUSTOMS.

UPON theſe ſubjects there is but little recorded in the accounts of the Netherlands. A violent ſtorm, which happened in 1646, having waſhed away the ſands from the downs of Domburg, in the iſland of Walcheren, in the province of Zealand, diſcovered ſeveral ſtones, with Roman inſcriptions, and figures of Roman deities. On one ſtone was a figure of Jupiter, ſtanding erect, with a pike in his right hand, and an eagle at his feet. On another, was a figure of Neptune, holding a dolphin in his right hand, and a trident in his left. On a third was a figure of the goddeſs Nehalennia, ſitting with a baſket of fruit on her left. On a fourth ſtone, was the image of the ſame goddeſs, ſtanding erect; and it would appear, that there was formerly a temple at this place, dedicated to the goddeſs Nehalennia, becauſe among the many ſtones found here engraved with ancient figures and inſcriptions, ſeveral were inſcribed to this goddeſs, or had her figure engraved upon them.

Near the city of Nimeguen, is a building, which was formerly an imperial palace, and near which are ſeveral magnificent remains of ancient buildings: among theſe is an arch of a prodigious magnitude, with ruins of other amazing arches, beſides columns and fragments of ſtones, with Roman inſcriptions.

In the year 1607, was dug up, in a garden between Dendermonde and Aloſt, in Auſtrian Flanders, an earthen veſſel, containing 1600 Roman gold medals, each about the value of a guinea, and among them were ſeveral medals of Antoninus Pius, Marcus Aurelius, and Lucius Verus.

At Rotterdam is ſtill ſtanding the little obſcure houſe in which the famous Eraſmus was born, and over the door of which is the following diſtich:

Ædibus his ortus, Mundum decoravit Eraſmus,
Artibus ingenuis, religione, fide.

The city of Groningen is diſtinguiſhed by ſome remarkable laws, among which are thoſe following:

The names of bankrupts, if the creditors require it, are publiſhed from the upper window of the town-houſe. This now is no more than a mark of infamy, but formerly the bankrupts were outlawed upon this publication.

Upon the death of parents in this city, the ſon poſſeſſes only a portion double to that of the daughter. No huſband or wife can ſell or mortgage one another's immoveable eſtates, without mutual conſent.

No perſon in this city can inherit, who is not baptiſed according to the form of the eſtabliſhed church.

A fourth part of the eſtates that devolve to perſons on the other ſide of the rivers Em and Lawers, not far from Groningen, comes to the public treaſury of that city.

Among the cuſtoms of the Dutch, none is more remarkable than their manner of travelling upon their canals, in Trechſchuyts, or covered boats, drawn by horſes, which is exceeding cheap and convenient; for the fare is not above a penny a mile, and in theſe veſſels a man may read, write, ſleep, eat, or divert himſelf without interruption, and without that fatigue and inconvenience which in a land journey are almoſt inevitable. In the winter, when the canals are covered with ice, a farmer's wife, with a baſket of butter and eggs upon her head, and her ſkates upon her feet, will ſkim away to market ten or a dozen miles, ſell her proviſions, and in a few hours be at home again with her family. Neither does the ice prevent the carriage

riage of more weighty burdens, for their canals are often loaded with carts and ſledges: the ſame element thus alternately ſerving them in the capacity of land and water.

REVOLUTIONS *and other* MEMORABLE EVENTS.

THE ſeventeen provinces, comprehended under the name of the *Netherlands*, or *Low Countries*, were ſo denominated from their low ſituation, at the mouths of ſeveral great rivers; and the maritime provinces were almoſt one continued moraſs, till drained, not many ages ago, by the induſtry of the numerous inhabitants of the neighbouring countries, who retired hither for ſhelter, from the perſecutions and oppreſſions of their reſpective princes.

The antient name of this country was *Belgia*, a name derived from the Bellovaci, who inhabited here in the time of Julius Cæſar. Theſe provinces were antiently divided between Gaul and Germany, as they were ſituated ſouth-weſt, or north-weſt of the Rhine: thoſe ſituated ſouth-weſt of the Rhine, were, with the reſt of Gaul, reduced under the obedience of the Romans, by Julius Cæſar. Afterwards, the Batavi, the Hollanders, and Zealanders, ſubmitted alſo to the Romans: but were looked upon as allies, rather than ſubjects. When the Franks eſtabliſhed a new kingdom in Gaul, theſe provinces were at firſt united to it, but when Germany was afterwards ſeparated from France, moſt of them fell to Germany.

The Franks, having made an entire conqueſt of Gaul, diſtributed moſt part of the lands amongſt their generals and officers, to one of whom great part of the Low Countries was given, under the title of Foreſter of Flanders, which officer continued for ſeveral deſcents, till Charlemagne, or Charles the Bald, of France, erected Flanders into a county, and changed the title of Foreſter to that of Count, without interrupting the ſucceſſion. The country, which was divided into ſeventeen provinces, enjoyed great privileges and immunities : and the provinces were long governed ſeparately by diſtinct princes, under various titles : but, in a ſeries of years, became united under one head, firſt in the houſe of Burgundy, and afterwards in the houſe of Auſtria.

Charles V. emperor of Germany, and king of Spain, in the year 1530, conſtituted the ſeventeen provinces one of the ten circles of the empire, under the title of the circle of Belgium ; and he it was who made the firſt encroachment on their liberties, by introducing foreign forces, and putting foreigners into places of truſt and profit in the adminiſtration. His ſon, Philip II. of Spain, proceeded to deprive the ſtates of the ſeveral provinces of their ſhare in the government,

ment, and endeavoured to render himſelf arbitrary, which occaſioned a general inſurrection of the inhabitants of the Netherlands, at the head of which appeared the counts of Hoorn and Egmont, and the prince of Orange; and Luther's reformation gaining ground at the ſame time in the Netherlands, his diſciples joined the malecontents: upon which Philip introduced a kind of an inquiſition, in order to ſuppreſs them, and many thouſands were put to death by that court.

The Flemings, excited by theſe perſecutions and encroachments, broke out into a civil war, in which many battles were fought. Count Hoorn and count Egmont were taken and beheaded; but the prince of Orange, retiring into Holland, preſerved that country, by the aſſiſtance of England and France, and ſix of the adjacent provinces, which entered into a treaty at Utrecht, for their mutual defence, in 1579, which treaty obtained the name of the Union at Utrecht, and was the foundation of that ſtate which is at preſent known by the name of the United Provinces.

The principal terms of this confederacy were, that theſe ſeven provinces ſhould unite themſelves as if they were but one province, reſerving, however, to every particular province, all their reſpective rights, liberties, and cuſtoms. They alſo mutually bound themſelves to aſſiſt each other with their lives and fortunes, againſt all attacks made upon them, under pretence of ſo-

ſovereignty or religion. It was agreed, that all frontier towns belonging to the union, ſhould be fortified at the charge of the province where it was ſituated: but where new fortreſſes ſhould be erected, the united provinces ſhould bear the charge. That all duties and cuſtoms ſhould be farmed out to the beſt bidder, and the royal revenues employed in their common defence. That all the inhabitants of the provinces from eighteen to ſixty, ſhould be muſtered and diſciplined, and neither peace or war ſhould be concluded, or taxes levied, without the conſent of all the provinces; and all differences that ſhould ariſe thereon, ſhould be ſubmitted to the ſtadtholder. As to religion, the reſpective provinces might regulate it as they ſaw fit, provided a free toleration was allowed; and no perſon examined, or called in queſtion for his perſuaſion in that point.

At this time the confederate provinces were reduced to ſuch diſtreſs, that, on a medal, which was ſtruck on occaſion of their union, they repreſented their new ſtate as a ſhip without ſails or rudder, left to the mercy of the waves, with this inſcription, *Incertum quo fata ferant*. In the mean time, a general peace was treating of at Cologne, by the mediation of the emperor, which the prince of Orange endeavoured by all means poſſible to obſtruct; being aſſured, that if it took place, the Spaniards would ſooner or later revenge themſelves upon him and his party. As his fortune, therefore, wholly depended upon eſtabliſhing the union, his firſt endeavour was to render a reconciliation with the king of Spain impracticable; whereupon he prevailed with the provinces to renounce all allegiance to his catholic majeſty; and put them upon making choice of the duke of Alençon for their ſovereign, with whom, it is ſaid, he had made a ſecret treaty to ſhare the Netherlands between them.

In the mean time the Spaniards continued very ſucceſsful in the Netherlands, taking the cities of Bois le duc, Breda, Tournay, Valenciennes, Mechlin, &c. which induced ſeveral great men among the malecontents to go over to their party; but the duke of Alençon, having the ſovereignty conferred on him, was ſo fortunate as to raiſe the ſiege of Cambray: his power however being limited within very narrow bounds by the ſtates, he was adviſed by his friends to endeavour to render himſelf abſolute: upon which, he took a reſolution of ſurpriſing Antwerp, and ſome other cities of the confederates: but his troops were repulſed by the burghers, with conſiderable loſs; and the duke having thus loſt his credit in the Netherlands, in the utmoſt confuſion at his diſappointment, returned to France, where he died not long after.

About the ſame time, in 1584, the United Provinces received a fatal blow, by the death of the prince of Orange, who was aſſaſſinated in his palace at Delft, upon which the ſtates of Holland conſtituted his younger ſon, prince

Maurice, their ſtadtholder, who was then but ſeventeen years of age; and ſuch was the diſtreſs of the ſtates at this time, that they offered the ſovereignty of their provinces to the king of France, who, being involved in a civil war, could not aſſiſt them; and the duke of Parma, taking advantage of their confuſion, reduced ſeveral of their cities to the obedience of the king of Spain, which ſo terrified the confederate ſtates, that they implored the protection of queen Elizabeth, in the moſt abject terms.

The queen, notwithſtanding ſhe did not think fit to accept the ſovereignty of the Netherlands, which was offered her, entered into a treaty with the confederate ſtates, by which ſhe ſtipulated to aſſiſt them with five thouſand foot, and a thouſand horſe, which together with the forces of the ſtates were to be commanded by an Engliſh general; that ſhips for the common defence ſhould be fitted out by both nations in equal numbers, to be commanded by the admiral of England. Sir John Norris commanded the firſt troops which were ſent over to the Low Countries, but the earl of Leiceſter, then the great favourite in the Engliſh court, ſoon procured that command to be conferred on himſelf. The Dutch received him with joyful acclamations, erected trophies to his honour, and pretended to eſteem him as their deliverer, conſtituting him ſupreme governor of the United Provinces, and generaliſſimo of their armies, and ſwearing obedience to him. They alſo gave him the title of *Excellency*, an honour till then never beſtowed upon a ſubject of England: but he ſoon found the great titles they had given him to be only nominal, being in all matters of moment controuled and oppoſed by a deputation of the ſtates, which when he reſented, they applied themſelves to the queen, inſinuating that he deſigned to render himſelf abſolute, and uſurp the dominion of their country. Complaints of this kind coming over daily from Holland, the earl of Leiceſter was recalled in 1588. Upon Leiceſter's laying down his commiſſion, the ſtates thought fit to create prince Maurice, ſon to the late prince of Orange, their generaliſſimo, who being ſupplied from England with money and troops, and entirely confided in by the Dutch, began to act with great advantage againſt the Spaniards; and upon the death of that fortunate general the duke of Parma, in 1592, when the Spaniſh troops grew mutinous, the Dutch advanced their conqueſts almoſt without oppoſition, ſo as to render the United Provinces intire and ſecure. The Dutch were now immoveably determined to maintain the dominion they had acquired, to which they were the more encouraged from the vaſt ſucceſſes they met with in their attacks upon the Spaniſh and Portugueſe ſettlements in the Indies, at this time, where they found ſuch immenſe treaſures, that their ſtate grew incredibly rich, even while they were engaged in a war with the moſt potent monarch of Europe.

The loſſes the Spaniards ſuſtained at ſea, and the apprehenſion of farther miſchief to their lantations in the Eaſt and Weſt Indies, made them, at this time, very deſirous of a peace, to which the confederate provinces ſeemed no leſs averſe; nor would they enter into a treaty with Spain, till they were acknowledged free and independent ſtates; and the Spaniards condeſcended ſo far, as to ſend their plenipotentiaries to the Hague, where, in the year 1609, a truce was concluded between Spain and the United Provinces for twelve years; the Seven Provinces were to be regarded as free ſtates; and it was moreover agreed, that each party was to remain maſter of what it was then in poſſeſſion of.

The Spaniards remained poſſeſſed of almoſt eight of the other ten provinces till the duke of Marlborough gained the memorable victory of Ramillies, in 1706; after which great part of theſe provinces acknowledged Charles king of Spain, afterwards emperor, by the name of Charles VI. for their ſovereign, in poſſeſſion of whoſe daughter the queen of Hungary, they re-

CHAP. VII.

Of DENMARK, NORWAY *and* SWEDEN.

SECT. I.

A general Account of Denmark, Norway, *and* Sweden.

THESE three kingdoms, were by antient geographers, comprehended under the general name of Scandinavia, and are the moſt northerly of any on the continent of Europe.

Denmark, the moſt valuable part of this country, is at preſent ſubject to its own king. It

Maurice, their ſtadtholder, who was then but ſeventeen years of age; and ſuch was the diſtreſs of the ſtates at this time, that they offered the ſovereignty of their provinces to the king of France, who, being involved in a civil war, could not aſſiſt them; and the duke of Parma, taking advantage of their confuſion, reduced ſeveral of their cities to the obedience of the king of Spain, which ſo terrified the confederate ſtates, that they implored the protection of queen Elizabeth, in the moſt abject terms.

The queen, notwithſtanding ſhe did not think fit to accept the ſovereignty of the Netherlands, which was offered her, entered into a treaty with the confederate ſtates, by which ſhe ſtipulated to aſſiſt them with five thouſand foot, and a thouſand horſe, which together with the forces of the ſtates were to be commanded by an Engliſh general; that ſhips for the common defence ſhould be fitted out by both nations in equal numbers, to be commanded by the admiral of England. Sir John Norris commanded the firſt troops which were ſent over to the Low Countries, but the earl of Leiceſter, then the great favourite in the Engliſh court, ſoon procured that command to be conferred on himſelf. The Dutch received him with joyful acclamations, erected trophies to his honour, and pretended to eſteem him as their deliverer, conſtituting him ſupreme governor of the United Provinces, and generaliſſimo of their armies, and ſwearing obedience to him. They alſo gave him the title of *Excellency*, an honour till then never beſtowed upon a ſubject of England: but he ſoon found the great titles they had given him to be only nominal, being in all matters of moment controuled and oppoſed by a deputation of the ſtates, which when he reſented, they applied themſelves to the queen, inſinuating that he deſigned to render himſelf abſolute, and uſurp the dominion of their country. Complaints of this kind coming over daily from Holland, the earl of Leiceſter was recalled in 1588. Upon Leiceſter's laying down his commiſſion, the ſtates thought fit to create prince Maurice, ſon to the late prince of Orange, their generaliſſimo, who being ſupplied from England with money and troops, and entirely confided in by the Dutch, began to act with great advantage againſt the Spaniards; and upon the death of that fortunate general the duke of Parma, in 1592, when the Spaniſh troops grew mutinous, the Dutch advanced their conqueſts almoſt without oppoſition, ſo as to render the United Provinces intire and ſecure. The Dutch were now immoveably determined to maintain the dominion they had acquired, to which they were the more encouraged from the vaſt ſucceſſes they met with in their attacks upon the Spaniſh and Portugueſe ſettlements in the Indies, at this time, where they found ſuch immenſe treaſures, that their ſtate grew incredibly rich, even while they were engaged in a war with the moſt potent monarch of Europe.

The loſſes the Spaniards ſuſtained at ſea, and the apprehenſion of farther miſchief to their lantations in the Eaſt and Weſt Indies, made them, at this time, very deſirous of a peace, to which the confederate provinces ſeemed no leſs averſe; nor would they enter into a treaty with Spain, till they were acknowledged free and independent ſtates; and the Spaniards condeſcended ſo far, as to ſend their plenipotentiaries to the Hague, where, in the year 1609, a truce was concluded between Spain and the United Provinces for twelve years; the Seven Provinces were to be regarded as free ſtates; and it was moreover agreed, that each party was to remain maſter of what it was then in poſſeſſion of.

The Spaniards remained poſſeſſed of almoſt eight of the other ten provinces till the duke of Marlborough gained the memorable victory of Ramillies, in 1706; after which great part of theſe provinces acknowledged Charles king of Spain, afterwards emperor, by the name of Charles VI. for their ſovereign, in poſſeſſion of whoſe daughter the queen of Hungary, they remain to this day; and the French have been in poſſeſſion of their part of the ten provinces for near a century.

The ſtadtholderſhip of the Seven United Provinces, which was ſometimes entirely ſuppreſſed, was always elective till the year 1747, when it was made hereditary in the iſſue male of the late Stadtholder, William Charles Henry Frizo, prince of Orange, who died in 1751; and in default of iſſue male, in the female iſſue. William the preſent Stadtholder, ſon of the late William Charles Henry Frizo, was born the 8th of March 1748.

CHAP. VII.

Of DENMARK, NORWAY *and* SWEDEN.

SECT. I.

A general Account of Denmark, Norway, *and* Sweden.

THESE three kingdoms, were by antient geographers, comprehended under the general name of Scandinavia, and are the moſt northerly of any on the continent of Europe.

Denmark, the moſt valuable part of this country, is at preſent ſubject to its own king. It lies betwen 54 and 58 degrees north latitude, and between eight and thirteen degrees eaſt longitude. Its greateſt length from the Elbe in the ſouth, to Schagen in the north, is 240 miles; and its greateſt breadth, from Henegard in the weſt, to Copenhagen in the eaſt, is 180 miles. It is bounded on the north, by the Scagerac ſea, which ſeparates it from Norway; by the Sound, which divides it from Sweden, on the eaſt; on the ſouth, by the Baltic ſea and Germany; and on the weſt by the German ocean.

This country is naturally divided into two parts; Jutland and the iſlands formed by the Baltic ſea.

Jutland contains the provinces of Sleſwic, Rypen, Aarhuſen, Wyburg, and Alburg. The chief town in each of theſe gives name to its reſpective province.

The iſlands are Zeland, Funen, Arroe, Langland, Laland, Falſter, Mona, or Moon, Femeren, Bornholm and Alſen. The moſt conſiderable towns are Copenhagen, the metropolis of the kingdom, Elſenore, Copping, Odenſee, Rutcopping, Naxhow, Nycopping, Stege, Borge, Sonderberg and Sandwick.

Norway, ſubject to the king of Denmark, is ſituated between 57 and 72 degrees north latitude, and between 4 and 30 degrees eaſt longitude. Its greateſt length from north to ſouth is 1000 miles; but its greateſt breadth is not above 180 miles. It is bounded by the Frozen ocean on the north, by the Dofrine mountains on the eaſt, which ſeparate it from Sweden; by the Scagerac ſea on the ſouth, and by the Atlantic ocean on the weſt.

This country is divided into four provinces, 1. Aggerhuys. 2. Bergen. 3. Drontheim, and 4. Wardhuys, or Norwegian Lapland. The chief towns are Chriſtiana, or Anſlo, Aggerhuys, and Frederickſtadt in the province of Aggerhuys; Bergen and Stavanger in Bergen; Drontheim in Drontheim, and Wardhuys in Norwegian Lapland.

The iſlands belonging to the king of Denmark are Iceland, which is ſituated between 10 and 20 degrees weſt longitude, and between 63 and 67 degrees north latitude; Eaſt Greenland, ſituated between 10 and 30 degrees eaſt longitude, and between 76 and 80 degrees north latitude. Weſt Greenland, ſituated between the meridian of London, and 50 degrees weſt longitude, and between 60 and 75 degrees north latitude. And the Farro iſlands, which lie between Iceland and Scotland, and are twenty-four in number.

Sweden lies between 56 and 69 degrees north latitude, and between 10 and 30 degrees eaſt longitude. Its greateſt length from eaſt to weſt is 900 miles, and its greateſt breadth is 500 miles. It is bounded on the north by Norwegian Lapland, by Ruſſia on the eaſt, by the Baltic, the Sound and the Scagerac ſea on the ſouth, and by the Dofrine hills, which divide it from Norway, on the weſt.

The moſt general diviſion of this kingdom is into 1. Swediſh Lapland. 2. Finland. 3. Sweden proper. 4. Gothland, and, 5. the Swediſh iſlands in the Baltic.

1. Swediſh Lapland contains the provinces of Torne Lapmark, Kimi Lapmark, Lula Lapmark, Pithia Lapmark, and Uma Lapmark.

The chief towns in theſe provinces are Torne, Kimi, Lula, Pithia, and Uma.

2. Finland contains the provinces of Eaſt Bothnia, Cajania, Savoloxia, Travaſtia, Finland proper, Kexholm and Carelia, the two laſt ſubject to Ruſſia. The chief towns are Nakarleby, Cajanburg, Koſkempe, Travaſtius, Abo, Raſeburg, Kedes and Wyburg.

3. Sweden properly comprehends the provinces of Angermania, Jemptia, Medelpedia, Helſingia, Geſtricia, Dalecarlia, Weſtmania, Uplandia, Nericia and Sudermania. The principal towns are Hernoſand, Reſtund, Judal, Dilſbo, Gevalia, Hedmora, Aroſia, Upſal, Stockholm, the metropolis of the kingdom, Orbro, and Tegla.

4. Gothland contains the provinces of Wermeland, Dalia, Bahus, Haland, Weſt and Eaſt Gothland, Smaland, Bleking and Schonen. The chief towns are Carolſtadt, Daleburg and Malmoe, Gottenburg, Helmſtadt, and Lunden.

5. The Swediſh iſlands are Gothland, Oeland, Aland and Rugen. The chief towns in theſe iſlands are Wiſby, Bornholm, Caſtleholm and Bergen.

In Denmark are the biſhoprics of Copenhagen, Alburg, Wyburg, Arhuſen, Rypen and Sleſwic. The only univerſity is that of Copenhagen.

In Sweden is the archbiſhopric of Upſal, and the biſhoprics of Gottenburg, Lunden, Linkopping, Abo, Wexio, Scara, and Stregnis. And the Univerſities of Upſal, Lunden and Abo.

The king of Denmark has not, in all his dominions, one navigable river. The Eden and the Tron run from eaſt to weſt, for a ſhort courſe, and fall into the German ſea below Tonningen. The Trave riſes in Holſtein, runs eaſtward, and at laſt diſcharges itſelf into the Baltic below Lubec.

There are few navigable rivers in Sweden; but a number of torrents, which run from the mountains precipitately through their reſpective provinces, and diſcharge themſelves into the Gulph of Bothnia. The chief of theſe are the Torne, the Kimi, the Lula, the Pithia, the Uma, &c.

As Denmark is a flat marſhy country, ſurrounded by the ſea, the air is very ſubject to fogs. The air of Norway and Sweden is very ſharp and cold. The Dofrine mountains, which runs from north to ſouth for many hundred miles, are covered with ſnow for nine months in the year. The whole country is mountainous, rocky and barren, and produces little elſe than herbage and timber. It however contains great plenty of copper and iron mines, which is the chief part of their traffic with the Engliſh, and their timber enables them to ſupply the French with materials for building their ſhips.

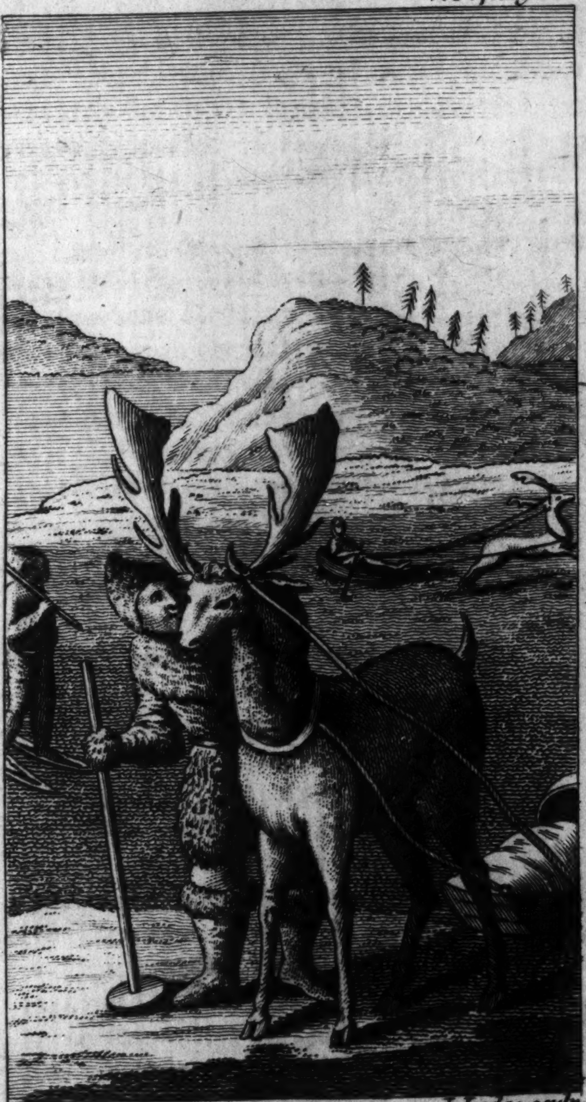
SECT. II.

A particular Account of the moſt curious natural Productions of Denmark, Norway, *and* Sweden, *in the Animal, Vegetable, and Foſſil Kingdoms; of remarkable Mountains and Volcanos; of medicinal and other ſingular Springs; of Lakes, Cataracts, Whirlpools, and other natural objects of Curioſity.*

ANIMALS.

THE rein-deer is an animal peculiar to Norway, Lapland, and other northern countries, and is a ſpecies of ſtag, with the horns ramoſe, and cylindric, and their tops palmated. It is a large and very beautiful ſpecies of ſtag; not inferior to the elk in ſize or ſtrength, greatly exceeds it in form, and has all the appearance of the deer kind; it is of the ſize of a ſmall horſe, but its ſhape is exactly that of the red deer; the head is oblong, large and gradually ſmaller from the region of the ears to the ſnout, where it is not ſo obtuſe as moſt of the deer kind: the horns are very large and very beautiful; and are of a middle kind between thoſe of the ſtag and of the elk; they riſe with a very large cylindric and ſtrong trunk, which is continued to a great height,

V.6. p.190.



J. Lodge sculp

The manner of travelling in Sledges, drawn by Rein deer in Lapland

2 AU 58

height, as in the ſtag; and in the ſame manner as in that ſpecies, ſends off its ramifications: but towards the top it ſpreads into breadth, and becomes palmated ſo as on the whole to exceeed all the horns of the deer kind in beauty.

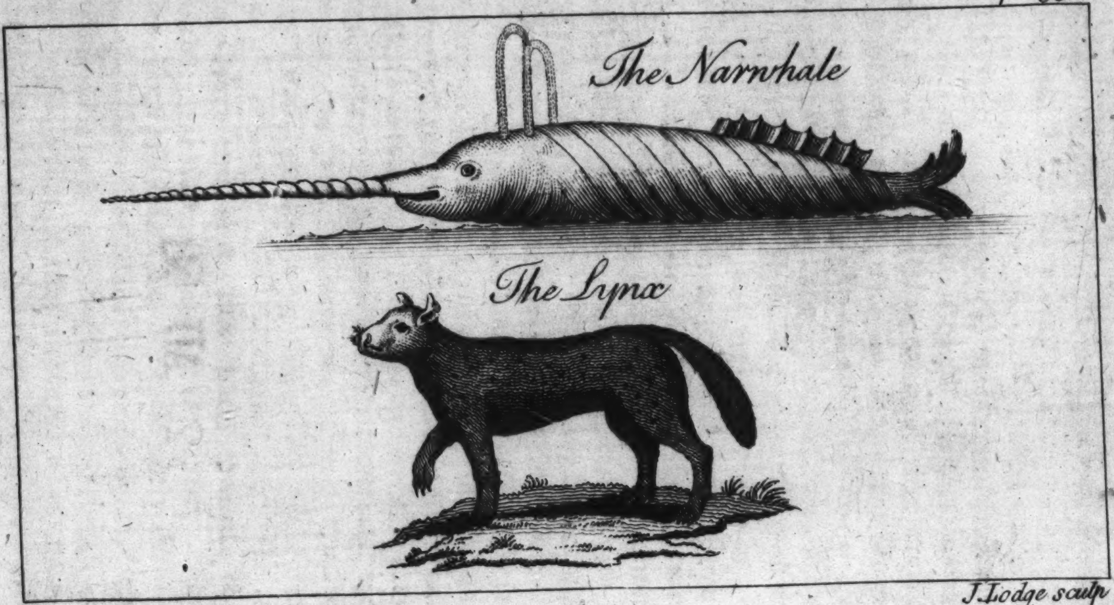
The rein-deer of Lapland are of wonderful ſervice to the inhabitants of that country, who bring them up to be tame and tractable, feed upon their milk and fleſh, make cloaths of their ſkins, and uſe them to draw ſledges, in which they travel over the ſnow with prodigious ſwiftneſs. This creature's colour inclines to an aſh, but his haunches and ſhoulders, and the parts under his belly are white. The feet of the rein-deer are thick, ſhort, and cloven; and when they walk their joints make a ſort of noiſe like the claſhing of ſtones one againſt another. Their ordinary food is moſs, and with this ſuſtenance only they will perform journies of eighty or a hundred miles a day. The ſledges, in which the Laplanders are drawn by the rein-deer, are ſhaped like boats, only they are flatted behind, and not pointed, as they are before. The bottom of the ſledge is convex, that it may ſlide with more eaſe over the ſnow; and the traces are faſtened about the neck of the animal, going down his breaſt, and between his legs. The reins are tied to his horns, whereby he is guided by the traveller, who, by the motion of his body, and the help of his hand, takes care to balance the ſledge, and prevent its overturning, which it is in danger of doing, by reaſon of the roundneſs of its bottom. They hang bells to the trappings of the rein-deer, with which the animal is ſaid to be much delighted.

The bear is a native of theſe countries, and is a genus of that claſs of quadrupeds called the *feræ*, whoſe diſtinguiſhing characteriſtic is, that the fore-teeth are ſix each way, and the canine teeth are longer than the others. Of this genus there are two ſpecies, the *urſus* with an abrupt tail, or the common bear, and the *urſus* with an elongated tail. The common bear is a large, but an uncouth and an unſightly animal, growing to different ſizes in different places, from that of a maſtiff dog to the bigneſs of a ſmall heifer; the whole creature is covered with a thick and deep fur, in ſuch manner that it appears rather a ſhapeleſs lump than an animal; the head is large and long, the neck is ſhort, but very thick; the thighs are long, but the under part of the legs ſhort, and it has a knee-pan or patella at that joint; the feet are divided each into five toes. The bear with an elongated tail grows to the ſize of a large maſtiff dog, and is bulky in proportion.

In Greenland and other parts towards the pole the bear is very large and white. The white bears of Greenland are differently ſhaped from thoſe of other countries, being leaner and ſwifter, with a longer neck, and a head more like a hound's than that of a common bear; neither can they properly be ſaid to growl, but rather bark like a dog that is hoarſe. Their ſkin is a good defence againſt the ſeverity of the cold, their

2 AU 58

V. 6. p. 193.



The Narwhale

The Lynx

J. Lodge sculp

their hair being long and ſoft as wool, and their fleſh is indifferent food. Some of theſe creatures are ſix feet high, and fourteen in length; and they are ſaid to be ſo tender of their young, that they will rather ſuffer themſelves to be killed, than deſert them when in danger. They are often found floating on the ice at a vaſt diſtance from the ſhore, and ſwim from one mountain of ice to another, feeding on dead whales or other fiſhes they happen to meet with.

The lynx is alſo a native of theſe northern countries, and is the truncated tailed *felis*, or cat, with the body brown, and ſpotted with black. This is a large and robuſt animal, leſs however than the lion; the head is large, but not long, and the eyes large and fierce; the ears are very large, and are ornamented at top with a pencil of fine black hair; the mouth is furniſhed with very terrible teeth, and there are whiſkers about it, and alſo over the eyes; the breaſt is large and broad; the legs robuſt, and the claws terrible; the tail is ſhort and abrupt; but thick, and well covered with hair. The fur upon the whole animal is very long and deep, and of a pale reddiſh brown; the whole body and legs are ſpotted with black. It is a very fierce creature, and remarkable for the quickneſs of its ſight. It keeps generally in the woods, and lurks in holes in the earth, which he digs for himſelf. In the day time he will lie hid, and ſteal upon his prey, which he can ſee at a great diſtance.

The glutton, the martin, and the ermin, are alſo natives of theſe countries, and are all three ſo many ſpecies of *muſtela,* the characters of which are, that the upper fore-teeth are ſtraight, diſtinct and acute; the fore-teeth of the lower jaw are obtuſe and cluſtered, two of them ſtanding inward; the feet are made for climbing.

The glutton, or *gulo*, is the reddiſh brown muſtela, with the middle of the back black; it is about the ſize of our common cat, but the body, unleſs when diſtended with food, as is very frequently the caſe, is much ſlenderer in proportion to its length; the head is ſmall, and of an oval figure; the ears are ſhort and patulous; the noſtrils are large, and the mouth is wide, and well furniſhed with teeth; the legs are ſhort, and the claws extremely ſharp; the body is of a duſky browniſh colour, with a black ridge on the back; the belly is pale and whitiſh. It lives in woods, and takes its poſt generally on trees, from whence it precipitates itſelf down on any thing that is fit for its prey. It is the moſt ravenous of all animals, and will feed on carcaſſes, though its more uſual food is birds, and the ſmaller quadrupeds. It will eat in ſuch a manner as not to be able to ſtir for many hours, and will lie diſtended, panting, and as it were dying. Many ſtrange ſtories are related of the effects of this creature's voracious appetite.

The martin is the blackiſh brown muſtela, with a pale throat, about the ſize and ſhape of the gulo; the tail is equal to the whole body in

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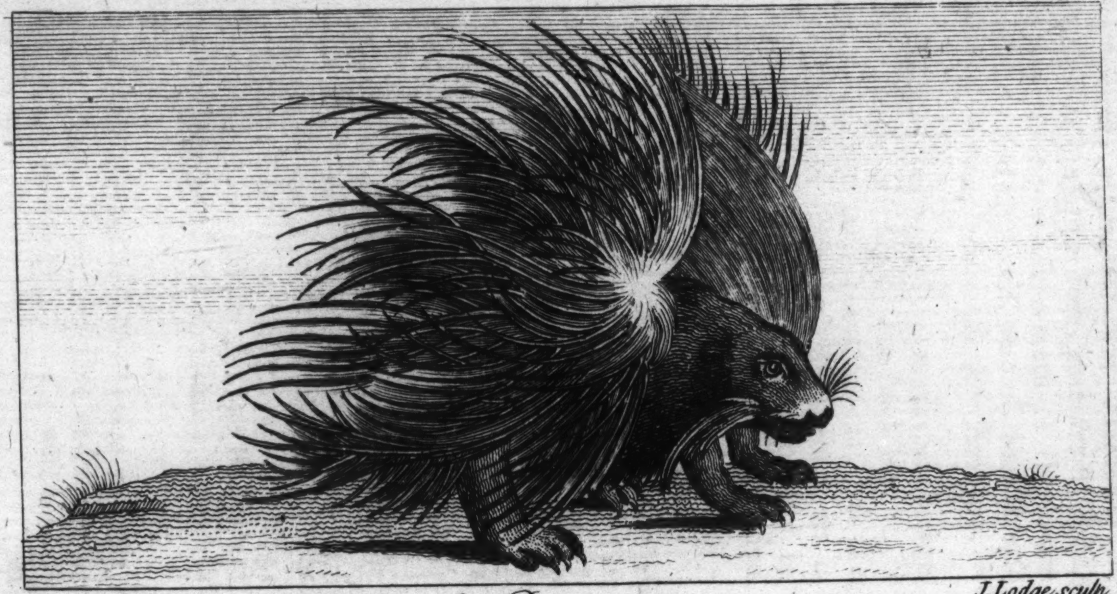

J.Lodge sculp

A Porcupine.

in length; and is very buſhy or covered with long hair; as is the whole body with a deep fine fur of a very dark brown. It feeds on birds, and the ſmaller quadrupeds.

The ermin is the muſtela with narrow ears, and the tip of the tail black. It is a very beautiful creature; the ſize is that of the common weaſel; the whole body of the animal is the pureſt and brighteſt white; the tip of the tail is of a deep black, and the fur is extremely valued.

The porcupine is a native of theſe northern countries, and is a genus of quadrupeds called by natural hiſtorians *hyſtrix*, the characters of which are, that the fore-teeth are obliquely truncated; there are no canine teeth; the ears are of a figure approaching to round, and the body is covered with prickles or ſpines.

The European porcupine is a large animal, but with the ſingular covering of its ſpecies appears much more ſo than it really is; it ſomewhat reſembles the badger in ſhape: its length from the noſe to the tail is about two feet; and the whole body is covered with a kind of briſtles; thoſe on the ſhoulders, legs, ſides and belly, are of a deep and gloſſy black; on the middle of the back, the hips and the loins, and on the tail where the ſpines have their origin, they are variegated with black and white: theſe in figure and conſiſtence perfectly reſemble the briſtles of a hog, and are quite diſtinct from the ſpines or quills.

The neck of the creature is ſhort, and the head thick and obtuſe; the noſtrils are very large; they are not however open and patulous, as in ſome animals, but formed of a tranſverſe ſlit; the upper lip is ſplit in the middle, in the manner of that of a hare; and the front of the head is ornamented with whiſkers, like thoſe of a cat; the eyes are very ſmall, and the ears like thoſe of the human ſpecies; the top of the head is decorated with a very ſingular creſt, formed of briſtles of a great length, not leſs than eight inches, ſtanding erect; and the creſt is continued along the neck to the ſhoulders. The legs are ſhort, and the feet large; there are five toes on each of the hinder feet, and only four on each of the others; and of theſe, one, which is the exterior, and larger than the reſt, reſembles a thumb; the briſtles, which cover the whole body, are thick, and terminate in a fine point; the form of theſe are ſingular, but that of the ſpines is much more ſo. The ſpines or quills, as they are commonly called, are of two kinds, ſome are ſhorter, thicker, ſtronger, and more ſharply pointed, having a kind of double edge, like a ſhoemaker's awl; the others are longer, weaker, and more flexible, and are about a foot in length; the tail is about four inches long; it is armed with numerous ſpines, diſpoſed in ſeveral annular ſeries; and at the extremity of it, inſtead of theſe ſpines, there are ten or twelve tubular bodies of the ſame thickneſs with them, but only of about half their length; theſe ſtand on ſlender pedicles, and are open at the end, and all the way tranſparent. This creature, like the bear, ſleeps during the winter.

The leming is a quadruped peculiar to theſe countries, and is a ſpecies of mouſe, with a ſhort tail, and a body variegated with black and tawny; it reſembles the common rat in ſhape, but its tail is about five inches; its fur very fine, and is tinged with a variation of colours; it is alſo called the Norway rat, and ſometimes the ſable mouſe of Lapland. It is nearly as large as a ſmall ſquirrel, and ſo fierce, that, if a ſtick be held out to it, it will bite at, and hold it ſo faſt, that it may be ſwung about as it hangs to the ſtick. It breeds in the mountainous places; and, at times, comes down into the low country, where the vaſt troops of it deſtroy all the vegetable produce, and often dying afterwards upon the place, will leave a ſtench which occaſions peſtilential fevers. Theſe creatures in their marches keep a direct courſe, generally from north-eaſt to ſouth-weſt, and each troop conſiſts of a great many thouſands, who march in lines ſome yards long, and parallel to each other. They travel by night, or in the twilight, and lie ſtill by day; and if they meet with any thing to interrupt their courſe, they do not turn out of their lines, even though it be a fire, a deep well, a river, a lake, or other obſtacle, but without heſitation venture through it, by which means vaſt numbers are ſometimes de-

deſtroyed. If they are met ſwimming over lakes, and forced out of their courſe, they preſently return into it again; and when they are ſtopped in the fields, they raiſe themſelves upon their hinder feet like a dog, and make a kind of barking or ſqueaking noiſe, leaping up as high as a man's knee, and defending their line as long as they are able. If a houſe happens to be in their way, there they ſtop till they die; for they never come into houſes, or meddle with the food of the inhabitants. Through a ſtack of corn they will eat themſelves a paſſage, and when they march through a meadow, they damage it much by eating the roots of the graſs; but if they encamp there by day they quite ſpoil it, making it look as if it were burnt or ſtrewed with aſhes. Theſe creatures are very fruitful, but their breeding does not hinder their march; for ſome of them have been obſerved to travel with a young one in their mouths, and another upon their backs. The roots of graſs, with rotten wood, and the inſects contained in it, are their chief food; and during the winter they lie under the ſnow, having breathing holes at top.

Among the birds peculiar to theſe northern countries, one of the moſt remarkable is called imber, or the great northern diver. It is a pretty large ſea bird, ſomewhat bigger than a gooſe, with a long neck; the upper part black, as well as the bill and feet; but from the breaſt downwards, it is white; the wings are ſo ſhort that the bird can hardly raiſe itſelf with them; and the legs ſtand ſo far backwards, that they

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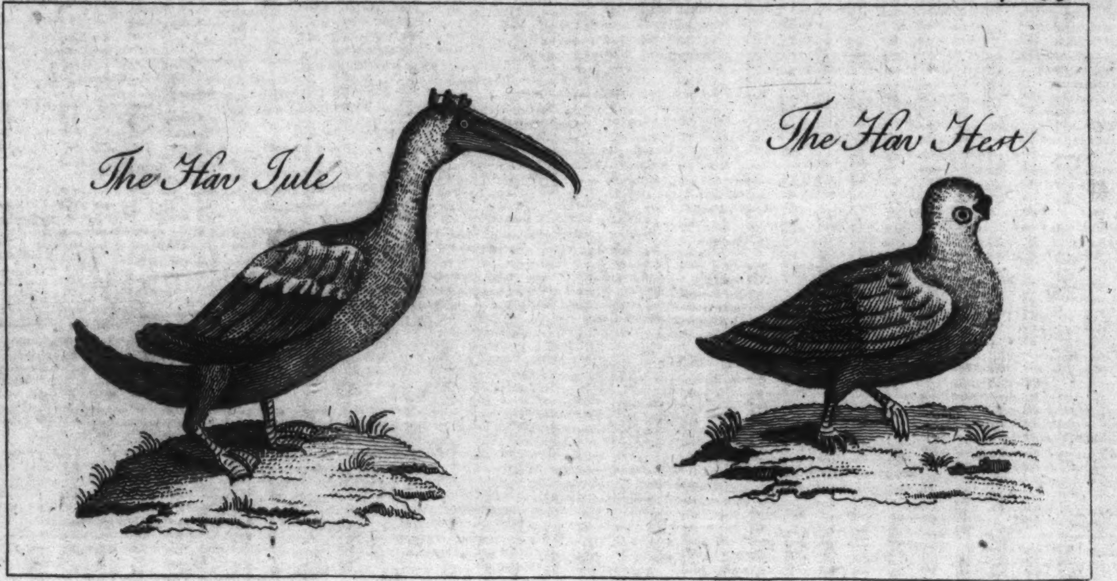

The Hav Jule

The Hav Hest

J.Lodge sculp

are not ſo fit to walk with as to paddle along the water.

The muſvit, or black cap, is one of the ſmalleſt land birds; the body is black and yellow, but white on the breaſt, with a black cap on its head. This bird is always found about houſes in Norway, and is ſuch a lover of meat, that he watches every opening or hole to get into the pantry, where he falls upon the meat, and will eat its way into it like a mouſe; even the meat that hangs up to be ſmoaked, can hardly be preſerved from theſe birds, which are catched like mice in a trap.

The jav-jule is a bird peculiar to Norway, and has its name from this ſingular circumſtance, that, when the ſalmon comes up the rivers, particularly in the ſpring, it follows that fiſh, and ſeems pleaſed with its company, hovering on the water where it paſſes: it is a kind of ſignal to the fiſhermen.

The hav-heſt is a ſea-bird, not larger than a moor-hen; it is ſhort and thick, with ſmall wings, and feet like a gooſe. Theſe birds ſnort like a horſe, when he fetches breath, and have a motion on the water which reſembles the trotting of that animal, with ſuch heaving and violent puſhing, that, when they appear in large flocks, they make the ſea roar even in ſtill weather.

In the Norwegian and other northern ſeas there is frequently caught a large fiſh called a narval, or ſea-unicorn, remarkable for its long tooth or horn, which very much reſembles ivory, but is generally more ſolid and ponderous. This fiſh is ſmooth like an eel, its colour white ſprinkled with black ſpots, and its eyes about the bigneſs of a ſix-pence. It has two fleſhy fins, and a ſemicircular hole on the top of its head, from whence it ſpouts water like a whale, and, as ſome ſay, diſcharges its excrements. The horn or tooth of this animal grows ſtrait forwards from the middle of its upper jaw, and is curiouſly wreathed, and terminates in a point. With this ſtrong weapon it dares attack the ſtrongeſt whale, and can ſtrike with ſuch violence as to pierce the ſide of a ſhip. Some imagine the chief uſe of this prominent tooth is to break the ice, but it ſeems rather deſigned for the defence of the animal, and to enable it to procure its food; for we are credibly informed of a whale caught on the coaſt of Greenland, into the belly of which a narval had ſtuck his tooth up to the root, and was ſucking the blood and humours.

About the iſles of Farro there are great numbers of ſeals, or ſea-calves, of different ſizes, ſome being as big as cows, and others not larger than a calf. This animal is amphibious, living either on land or in the water; and has four feet, the extremities whereof are like fins. They frequently ſleep on the rocks by the ſea-ſide, having always one upon the watch to alarm the reſt in caſe of danger. In September, when they bring forth their young, they retire into caves under the rocks, into which the natives row their boats, and kill multitudes of them with ſtaves, not without ſome danger from the old ones, as well as from the waves. The iſlanders ſometimes ſhoot them, and ſometimes take them with nets and dogs, which being trained to the ſport will ſwim to them againſt the wind, that the ſeals may not ſmell them, and catching them faſt by the throat, hold them till their maſters come to their aſſiſtance.

The fleſh of the ſeal is ſtrong and but indifferent food, though the natives ſalt up part of it with the aſhes of ſea-weed, and melt the reſt for oil; and of their ſkins they make ſhoes and other wearing apparel.

In the ſame ſeas there are ſeveral ſorts of whales, particularly one called the grind-whale, the largeſt whereof are about five yards long, and come in great numbers under the land when the weather is dark or foggy. When any fiſhermen ſee them, they make ſigns to all the other boats, and thus getting together, they drive the fiſh into a creek or inlet, where they kill them with ſpears made for that purpoſe. The boats divide themſelves into two ſquadrons, one of which attacks the whales, and the other draws up in the form of a half moon, to prevent their getting out of the creek; but in the ſkirmiſh the boats are ſometimes overturned, the men drowned, and the fiſh make their eſcape. Part of the fat of theſe whales they uſe inſtead of butter, ſome they melt into oil, and the reſt of the fiſh they ſalt in the ſame manner as the ſeals, which makes their fleſh pretty much reſemble bacon.

There is another ſort of whales called doglins, about eight yards long, which come every year to a bay in the iſland of Suderoe, where the inhabitants drive them into an inlet, and kill them with ſpears. They are not ſo good meat as the former; for if a perſon eats their fat, it penetrates through the pores of his ſkin, and makes him ſmell ſtrong, and look yellow.

The ſeas of Greenland are ſtored with various kinds of fiſh, which are not ſo commonly found elſewhere, eſpecially whales, and thoſe larger than in any other part of the world, ſome of them being two hundred feet in length, but the more uſual ſize is from fifty to eighty or a hundred. The true whale differs from other fiſh that bears that name in his having no teeth, inſtead of which he has a kind of whiſkers of a horny ſubſtance growing on each ſide of his upper jaw, conſiſting of a great number of different blades, ſome of them a foot broad at the bottom, and twelve or fifteen feet long, ending in a ſort of fringe, not unlike hogs briſtles. Theſe whiſkers ſplit and faſhioned are what we call whalebone, and the genital member of the animal ſerves for the ſame purpoſe, but not the fins, as is commonly imagined. The whale has a very large flattiſh head, with two ſmall eyes,

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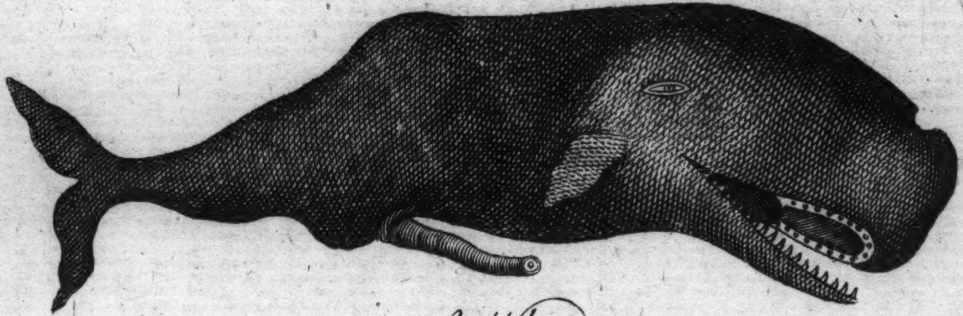
V.6. p.202.



A Whale

J.Lodge sculp

2 AU 58

not bigger than thoſe of an ox; and for his bulk he has a narrow throat, being ſeldom more than a foot wide, though he can open his jaws ſeveral fathoms. On the top of his head he has two holes, through which he draws in air, and diſcharges water taken in at his mouth, which he ſpouts up to a ſurprizing height. His bones are hard like thoſe of quadrupeds; but, inſtead of having a cavity in the middle, they are porous and full of marrow. The belly of the whale is white, but the reſt of the body is black or reddiſh; and the fleſh is coarſe, hard, and mixed with ſinews. The outermoſt ſkin is thin, which covers another almoſt an inch thick, but ſo tender, that it is of little or no defence to the animal againſt the aſſaults of its enemies. Between this ſkin and the fleſh lies the fat or blubber, from whence train-oil is procured by boiling. The whale has very ſtrong ſinews about the tail, with which he turns and winds himſelf as he pleaſes, and ſwims with wonderful ſwiftneſs, making a track in the ſea like a large ſhip under ſail. Theſe animals are very much tormented with a kind of lice, which ſometimes eat large holes in their bodies; and it is ſuppoſed they feel great pain before a ſtorm, being obſerved at ſuch a time to twiſt and tumble about in a violent manner. As to the food of whales, it is probably ſmall fiſhes of ſeveral ſorts; but upon opening their bodies there is ſeldom found any thing but a few weeds, and a quantity of black inſects like ſpiders, which are very numerous in the northern ſeas.

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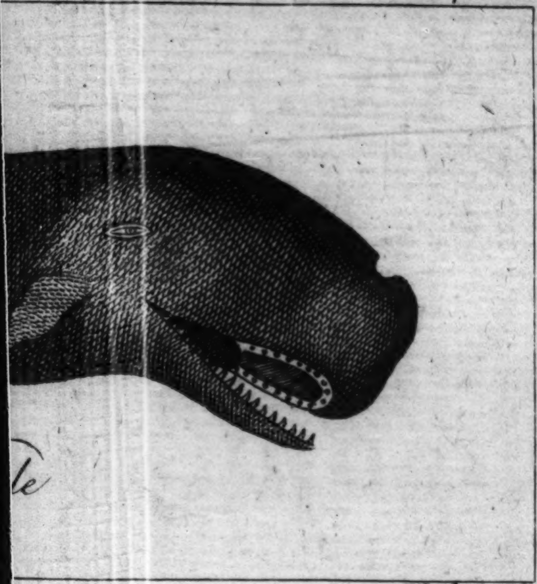

J.Lodge sculp

2 AU 58

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Whales copulate like four-ſooted beaſts, bring forth their young alive, and ſuckle them with their milk.

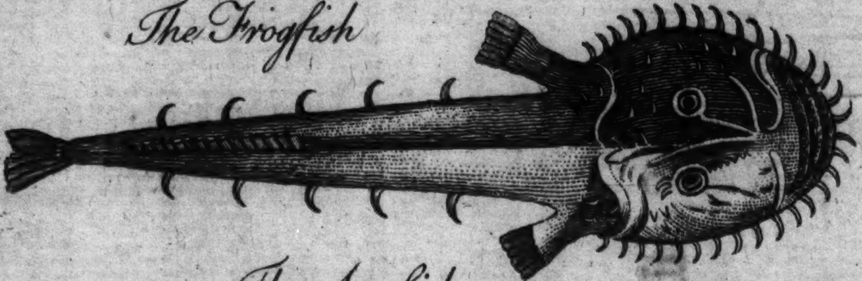
Beſides the whale, there are many other remarkable fiſhes and amphibious animals found near Greenland, and in other parts of the Northern ocean, which require a brief deſcription. Some of theſe indeed are looked upon to be of the whale kind, particularly the fin-fiſh, which equals the whale in length, but not in thickneſs, and has a fin on his back, which the whale has not; from whence his name. He throws water higher than a whale of his ſize; has brown lips, which are twiſted like a rope; and his body much reſembles a tench in colour. He is extremely nimble as well as ſtrong, and is killed in the ſame manner as the whale. When theſe fiſh come upon the coaſt, the whales diſappear.

The horſe-whale, called alſo the morſe or ſea-horſe, is an amphibious creature as large as an ox, with four feet, a thick round head, and a ſhort neck, in which lies his greateſt ſtrength. His eyes are red, his ears ſmall, and his noſtrils large, from whence he ſpouts water. His ſkin is very thick, and covered with hair, and from his upper jaw proceed two long teeth, which are as white as ſnow, and more eſteemed than ivory, as they keep their colour better. This creature is very bold, making towards the boat as ſoon as he is attacked, and endeavouring to overſet it, ſometimes tearing large pieces from it with

his

V.6.p.204.

The Frogfish



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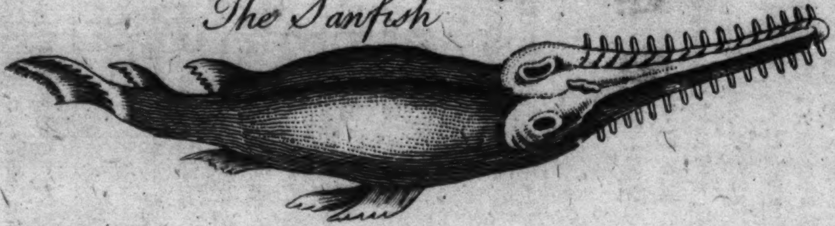

J Lodge sculp

2 AU 58

his teeth; but the ſeamen generally give him a warm reception, and diſpatch him with lances. When whales happen to be ſcarce, the oil and teeth of theſe animals help to ſupply the deficiency.

The monoceros, or ſea-unicorn, is not the only enemy the whale has to deal with. The ſword-fiſh, ſo called from his ſharp-pointed upper jaw reſembling a ſword, purſues the whale and fin-fiſh with great eagerneſs. They are of various ſizes, from three to twenty feet in length, are ſhaped almoſt like a man's arm, and their eyes ſtand far out of their head. A few of them will diſpatch a large whale, and when they have killed him they feed chiefly on his tongue; but ſometimes they are deprived of their prey by the fiſhermen, who are ſpectators of the combat.

Another enemy of the whale, and the moſt voracious of all, is the hay, of which there are ſeveral ſorts, the largeſt of them about 18 feet long, and generally of a greyiſh colour. This fiſh does not kill the whale outright, but bites large pieces of fat from his ſides, making holes as if they had been dug with a ſhovel; inſomuch that fiſhermen have ſometimes taken whales which have had great part of their blubber torn away in this manner. The liver of the hay is exceeding large, and abounds in oil; and his fleſh, when dried ſome days in the air, and afterwards boiled or roaſted, is accounted tolerable food; but the leſs the fiſh the better.

In the ſeas of Norway is to be ſeen the flying fiſh, ſo called from its power of flying to ſome conſiderable diſtance; it is much about the ſize and form of a large herring; and beſides the uſual fins of other fiſh, it has under its neck three broad and pretty large fins of a different and finer ſtructure, being nearly as thin as the wings of a fly; but they are ſtrengthened with ten rows of bone, running between the two membranes, on the back part of the neck: this fiſh has alſo a wing, or flying fin about ſix inches long, quite erect; and lower down the back another ſhorter, but broader fin. This fiſh is frequently ſeen when purſued by one more powerful, to raiſe itſelf ſeveral feet above the water, and continue its flight the length of two or three gun ſhots, when it muſt drop into the water, becauſe the wings, when grown dry, are of no longer ſervice to it.

Here alſo are found ſeveral kinds of Shark, ſome ſeveral fathoms long, and others no more than two feet in length, at full growth: theſe are fierce and voracious animals, deſtroying every other fiſh they can maſter; they have no bones, properly ſpeaking, except the ſpine; the reſt being only cartilages; they are viviparous, and, like the whale, bring forth their young alive, five or ſix at a birth, from a ſort of umbilical opening. In the belly of this fiſh is a ſort of eggs, ſome of them as large as a hen's egg: but they are ſoft and have no white: the ſkin of moſt ſpecies of the ſhark is hard, rough, and full of a vaſt number of prickles: and the fins are large, broad and thick; the mouth of the whole tribe of ſharks is not placed like that of any other kind of fiſh, but underneath a conſiderable long ſnout, which ſeems deſigned to prevent their deſtroying other fiſh in too great quantities: becauſe the ſhark is obliged to turn upon its back when it would devour its prey; and was it not for the time it is turning, in which the purſued fiſhes eſcape, there is nothing that could avoid it; for it is very quick in ſwimming, has a vaſt ſtrength, with the largeſt ſwallow of any fiſh, and is very devouring. It is very fond of human fleſh, and has been known to attack and kill ſeveral fiſhermen in theſe ſeas.

But perhaps the moſt wonderful and terrible animal in nature is a ſea monſter, called the great ſea ſnake, or the ſerpent of the ocean, which, though ſeldom ſeen, ſometimes viſits the coaſt of Norway, and keeps continually at the bottom of the ſea, except in the months of July and Auguſt, which is its ſpawning time; and then it comes to the ſurface in calm weather, but plunges into the water when the wind raiſes the leaſt wave.

According to the beſt acounts which biſhop Pontoppidan could gather concerning this monſter, it will, at times rear ſo much of its body out of the water, that its head will reach much higher than the main-top of any ſhip; and it will ſpout water out of its mouth like a whale: the form of it is that of a ſnake, the body is covered with ſcales, and the ſkin is uneven and wrinkled: it has two flaps, or perhaps broad fins, under its body, and is ſuppoſed to be 600 feet in length. It lies on the ſurface of the water in many folds; and there generally are, in a line with the head, ſome ſmall parts of the back to be ſeen above the ſurface of the water, when it moves or bends; and theſe at ſome diſtance, appear like ſo many caſks, or hogſheads, floating in a line with a conſiderable diſtance between each of them; the eyes are very large, of a blue colour, and look like two large pewter plates. The whole animal is of a dark brown colour, but variegated with light ſtreaks or ſpots, that ſhine like a tortoiſe ſhell. It has a kind of mane, which looks like a parcel of ſea weeds, hanging down to the water edge; and in its progreſs it throws the water in ſuch agitation, that it runs round it like the current of a mill. It is ſaid, that this monſter will ſometimes raiſe up its head, and ſnap a man out of a boat; and it is affirmed that it has been known to rear part of its body out of the water and throw it acroſs a veſſel of ſome hundred tons, and by its weight, ſunk it down to the bottom.

In theſe ſeas is alſo ſometimes to be ſeen an animal, which is called kraken, and which, according to biſhop Pontoppidan, is the largeſt ſea monſter in the world. This animal, as well as the great ſea ſnake, appears to have been totally unknown to every writer of natural hiſtory, as well antient as modern, before the biſhop wrote; but this worthy prelate has been ſo induſtrious in making enquiries about thoſe animals, and examining into every particular concerning which he could receive intelligence, that he ſeems not only to put their exiſtence beyond doubt, but to throw ſuch conſiderable lights upon the ſubjects, as may lead future naturaliſts to a thorough knowledge of them.

The kraken, the biſhop obſerves, is one of the many great things which are in the ocean, concealed from our eyes, or only preſented to our view for a few minutes. The fiſhermen of Norway unanimouſly affirm, and without the leaſt variation in their accounts, that when they row out ſeveral miles to ſea, particularly in hot weather; and by their ſituation expect to find 80 or 100 fathoms water, it often happens they do not find above 20 or 30, and ſometimes not ſo much. At theſe places, they generally find the greateſt plenty of fiſh, by which they judge the kraken is at the bottom, which occaſions theſe unnatural ſhallows: there are ſometimes 20 boats or more got together, throwing out their lines at a moderate diſtance from each other: the only thing they have then to obſerve, is, whether the depth continues the ſame, which they will know, by their lines; or whether it grows ſhallower. If this laſt be the caſe, they conclude that the kraken is riſing nearer the ſurface; then they immediately take to their oars, and endeavour to get off as faſt as poſſible. When they have reached the uſual depth of the place, and find themſelves out of danger, they lie upon their oars; and in a few minutes after, they ſee this enormous monſter come up to the ſurface of the water, where he ſhows himſelf ſufficiently, though his whole body does not appear, which, in all likelihood, no human eye ever beheld: its back or upper part, which ſeems to be about a mile and a half in circumference, ſome ſay more, looks at firſt like a number of ſmall iſlands, ſurrounded with ſomething that floats or fluctuates, like ſea weeds. Here and there a larger riſing is obſerved like ſand banks, on which various kinds of ſmall fiſhes are ſeen continually leaping about, till they roll off into the water from the ſides of it; at laſt ſeveral bright points or horns appear, which are thicker in proportion as they riſe above the ſurface of the water, and ſometimes they ſtand up as high and as large as the maſts of middle ſized veſſels.

Theſe are, it ſeems, the creatures arms, and it is ſaid that, if they were to lay hold of the largeſt man of war, they would pull it down to the bottom. After this monſter has been on the ſurface of the water a ſhort time, it begins to ſink again ſlowly; and then the danger is as great as before, becauſe the motion of his ſinking cauſes ſuch a ſwell in the ſea, and ſuch an eddy, or whirlpool, that it draws every thing down with it. As this enormous animal may be reckoned of the Polype, or Star fiſh kind, it appears that the parts which are ſeen riſing at its pleaſure, and are called arms, are properly the tentacula, or feeling inſtruments, called horns, as well as arms, with which they move themſelves, and likewiſe gather their food.

Beſides theſe inſtruments for this laſt purpoſe, the creature has a ſtrong and peculiar ſcent, which it emits at certain times, and by which it draws other fiſh in heaps about it. It is alſo obſerved, that for ſome months, the kraken is continually eating: and in other months he is voiding his excrements: during this evacuation, the ſurface of the water is coloured with the excrements, and appears thick and turbid. This muddineſs is ſaid to be ſo agreeable to the taſte or ~~ſmell~~ of other fiſhes, that they gather in prodigious numbers over the kraken, when by his arms or horns he ſeizes and ſwallows them, and in time converts them by digeſtion into a bait for other fiſh of the ſame kind.

VEGETABLES and FOSSILS.

THESE countries afford no vegetables which merit any particular notice: but Sweden, in particular, abounds with various kinds of minerals and other foſſils; and among its mines here is one of ſilver, into which the workman are let down in baſkets to the depth of above a hundred fathoms, where the roof of the mine is as high as a church, ſupported by vaſt arches of oak; and from thence they deſcend by ladders or baſkets to the loweſt part of the mine, at leaſt forty fathoms more. It is not known when this mine was firſt diſcovered, but it muſt have been wrought for many ages. The ore yields but indifferently, and requires great pains to refine it; however it annually produces about twenty thouſand crowns-worth of fine ſilver, of which the king has the pre-emption, paying one fourth leſs than the real value.

Several mines of ſilver and copper were diſcovered laſt century in the Swediſh Lapland.

Copper is found plentifully in ſeveral parts of Sweden, and is eſteemed the fineſt in Europe. The moſt noted mine is of vaſt extent, and about eighty fathoms deep, but it is ſaid to have ſuffered much by the falling in of the roof; and the working of it is attended with great diſcouragement, from the large ſhare the crown has in the profit. The copper made yearly out of this mine amounts to the value of two hundred thouſand pounds, whereof the king has the fourth part, and a duty upon the remainder of 25 *per cent.* when it is exported unwrought.

Copper is of all metals the moſt ductile and malleable after gold and ſilver, and abounds much in vitriol and ſulphur. It is found in glebes, or ſtones of various forms and colours, which are firſt beaten ſmall and waſhed to ſeparate all the earthy and impure parts wherewith they are mxed. After waſhing they are melted, and the metal run into a ſort of moulds which form large blocks, by ſome called ſalmons, and by others cakes of copper. To render it more pure and beautiful, they melt it again once or twice, ſome of its coarſe extraneous parts being left at each fuſion, and a quantity of tin and antimony added; and in this ſtate it is called roſe-copper.

This metal is often found native in a malleable ſtate, ſometimes in beautiful branched forms or ſmall ſlender fibres, and ſometimes in little globular lumps, or maſſes of an irregular figure.

The mines of Sweden likewiſe afford vaſt quanties of excellent iron, of which, beſides what is manufactured in the country, they export yearly to the value of near three hundred thouſand pounds.

Of the nature of iron ore, or the manner of working it, nothing need be ſaid in this place, having given a ſufficient account thereof in ſpeaking of our iron works in the foreſt of Dean in Glouceſterſhire.

The magnet or loadſtone, is found plentifully in the iron mines of Sweden, and indeed in all countries that have ſuch mines, though the beſt are ſaid to be brought from Bengal and China.

The magnet is not properly to be conſidered as a diſtinct ſpecies of foſſils, being in reality nothing but a very rich iron ore, found in detached maſſes of various forms and ſizes, of a duſky iron grey, and often tinged with a browniſh or reddiſh colour. It is very heavy and hard, of an uneven ſurface, and of a firm ſtructure, but uſually with ſome porous irregularities within. It is endued with ſeveral extraordinary properties, as that of attracting iron, and directing its poles to thoſe of the world, upon which laſt property the mariner's compaſs is conſtructed. Among the moſt remarkable properties and phænomena of the magnet are thoſe following. 1. Every magnet has two poles, one of which points northwards, the other ſouthwards; and if the magnet be ever ſo minutely divided, the two poles will be found in each piece. 2. One of theſe poles attracts, the other repels iron, but no other body. 3 The magnetic virtue is communicated to iron by the touch, and that very ſpeedily; though the longer the iron touches or joins the ſtone, the longer will its communicated virtue hold. 4. The magnet loſes none of its own virtue by what it communicates to the iron. 5. A piece of iron ſo touched by the loadſtone, and nicely ſuſpended on a ſharp point, will ſettle itſelf in a direction nearly north and ſouth. 6. The end touched with the ſouth pole of the ſtone will point northwards, and ſo *vice verſâ.* 7. A ſtrong magnet, at the leaſt diſtance from a leſſer or a weaker, cannot draw to it a piece of iron adhering actually to ſuch leſſer or weaker ſtone; but if it comes to touch it, it can draw it from the other: and yet a weaker magnet, or even a little piece of iron, can draw away another piece contiguous to a greater or ſtronger loadſtone. 8. A plate of iron only, but no other body interpoſed, can hinder the operation of the magnet, either as to its attractive or directive quality. 9. The virture of a loadſtone may be impaired by lying long in a wrong poſition, as alſo by ruſt, wet, &c. and may be quite deſtroyed by fire. 10. A piece of iron-wire well touched, upon being bent round in a ring, or coiled round on a ſtick, will generally loſe its directive virtue, or at leaſt have it much diminiſhed ; but if the whole length of the wire be not bent, ſo that the two ends be left ſtrait, the virtue will not be deſtroyed in thoſe parts, though it will in all the reſt. 11. A piece of wire that has been touched, being ſplit or cleft in two, the poles are ſometimes changed, as in a cleft magnet, the north becoming the ſouth, and the ſouth the north ; and ſometimes one half of the wire will retain its former poles, and thoſe of the other half be changed. 12. By drawing the back of a knife, or a long piece of ſteel-wire, &c. leiſurely over the pole of a magnet, carrying the motion from the middle of the ſtone to the pole, the knife or wire will accordingly attract one end of the needle ; but if the knife or wire be drawn from the pole to the middle of the ſtone, it will repel that end of the needle which in the other caſe it attracts. 13. If either a magnet or piece of iron be laid on a cork, ſo as to float freely in the water, it will be found, that which ſoever of the two is held in the hand, the other will be drawn towards it ; ſo that iron attracts the magnet as much as it is attracted by it. 14. As the magnet communicates its virtue to iron, ſo when armed as they call it, or ſet in iron, it will take up a greater weight of it than it can alone. 15. A knife, &c. touched with a magnet, acquires a greater or leſs degree of virtue, according to the part it is touched on. It receives the ſtrongeſt touch when it is drawn ſlowly from the handle towards the point over one of the poles of the magnet; and if the ſame knife thus touched, and in poſſeſſion of a ſtrong attractive power, be re-touched in a contrary direction, viz. by drawing it from the point towards the handle over the ſame pole, it immediately loſes all its virtue. 16. The magnet acts with the ſame force *in vacuo*, as in the open air. Iron bars, by ſtanding long in an erect poſition, acquire a magnetic virtue to a ſurpriſing degree, the lower end of ſuch bars being the north pole, and the upper the ſouthern. Nay, tongs and pokers, by being often heated, and ſet to cool again in a poſture nearly erect, have acquired this wonderful property, which is alſo communicated to iron by a ſtrong attrition all one way.

2 AU 58

END *of* VOLUME VI.